

see Hastings notes May 1975,
middle pages of book and 2/3
and July 9-10 2/3 of way to end
and July 1974 3/4 toward end



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Pearson, O.P.

1971

catalogue

#4750 - #498~~4~~3

Peru

Bolivia

Argentina

Pearson
1971

Catalog

August 21, 1971

chromosome 5 mi. E Yungos, Cañete Valley, 8,340 ft., Dept. of Lima, Peru
4750 ♀ Phyllotis? interesting 190 x 100 x 23 x 18 19gms

chromosome 6 mi. NE Yungos, Cañete Valley, 8,870 ft., Dept. Lima, Peru
4751 ♀ Calomys? large nipples; 5 large abs. [194] x [88] x 24 x 20 40gms

August 23, 1971

3 mi. SE Izcuchaca, Rio Montano, 9000 ft., Dept. Huancaavelica, Peru
4752 ♀ Phyllotis ut. thin, no emb. 232 x 125 x 27 x 24 35gms.
4753 ♀ Phyllotis " " 238 x 130 x 28 x 26 30gms.

chromosome 6 mi. NE Yungos, Cañete Valley, 8,870 ft., Dept. of Lima
4754 ♂ Phyllotis 204 x 110 x 25 x 21 x 23g. test 3mm

Aug. 24

17 mi. WNW Huancayo, 11,160 ft., Dept. of Junin
4755 ♂ Calomys testes 2mm
4756 ♀ " uterus juv.

3 mi. SE Izcuchaca, Rio Montano, 9000 ft., Dept. Huancaavelica, Peru
4757 ♂ Calomys.
chromosome 4758 ♂ Phyllotis testis 9, SV 11mm.

2 mi SE Huanta, 9500 ft., Dept. ayacucho,
chromosome 4759 ♀ Phyllotis uterus vascular
chromosome 4760 ♂ Akodon testis 3mm

7 mi. NE Yungos, Rio Cañete 9080 ft.; Dept. of Lima.
4761 ♂ Dryomys caught 8/21 testes 5, SV 3

2 mi SE Huanta, 9500 ft., Dept. ayacucho
chromosome 4762 ♂ Phyllotis testes 3mm
chromosome 4763 ♀ " uterus juvenile

Pearson
1971

Catalog

3 mi. SE Pzenchaca, Rio Mantaro, 9000 ft., Dept. Huancavelica

chromosome

4764

♂ abodon

testis 4 mm

4765 ♂ Calomys

139 x 68 x 19 x 15 11 gm.

17 mi WNW Huancayo 11,160 ft., Dept. Junin

4766 ♂ Calomys testis 3 mm.

148 x 70 x 19 x 16 12 gm.

6 mi NE Yungos, Rio Canete, 8870 ft., Dept. Lima, Peru

4767 ♂ Calomys? testis 3 mm

193 x 100 x 25 x 19 18 gm.

Sept. 4

14,000 ft.

1 mi. NE Challa Polca, Dept. of Puno, Peru

chromosome

4768

♀ Phyllotis boliviensis

Vagina not open. Uterus white, no scars

chromosome

4769

♀ Bolomys berlepschii

" " " Uterus thin, no scars

chromosome

4770

♀ Chocomaia jelskii

uterus faint scars

Sept. 5, 2 mi. NE Tarata, 11,500 ft., Dept. of Tacna

4771 ♀ Phyllotis magister

uterus white, no scars, small stomach with greenish, yellow & brownish

4772

♂ " darwini

testis 3 mm, stomach green vegetable, swells soggy

4773

Bufo spinulosus
Food

in mousetrap overnight

Sept. 6

4774

♂ or andinomys
Ph. magister

testis 12 flabby, SV 13, chilled tubes barely visible, stomach yellow from snuff trap. yellow stain on chest, lips, inguinal

4775

♀ Abodon bolivi

stomach cont. black. Uterus thick, no scars in coarse green grass along asaguna.

skull only

4776

♀ Ph. magister

240 x 129 x 30 x 25 50g vagina not open, uterus thin white, placentae not open; stomach grey.

~~4777~~

skull only

4777

♀ " "

224 x 115 x 27 x 24 42g vag. not open, ut. thin white, placentae not open; stomach green, black, grey mix.

skull only

4778

" "

test 4 mm white, SV 4 mm
243 x 125 x 30 x 24 52g. stomach green-brown.

Pearson
1971

caught Sept. 6, prep. Sept. 9

chromo

4779 ♂ *Bolomys berlandieri*

testes 7, SV 9.

chromo

4780 *Ph. darwini*

Testes 9 mm, SV 13 mm.

3 mi. N Tacna, 3300 ft., Dept. Tacna, Peru,

Sept. 8

4781

Phyllotis gerbillus
~~*Seba*~~

under trash in Tillandsia desert,

4782

"

"

"

"

"

4783

"

"

"

"

"

4784

"

"

"

"

"

4785

2 skulls

stuck on oil drum

"

"

6 km. NE Tarata 12,900 ft., Dept. of Tacna

Baena's Pampa = Arenas Pampa

skull only

4786

Ph. darwini chilensis
♀ *Ph. magister*

Sept. 11
Vagina open, bloody, uterus full of bloody fluid,

216 x 110 x 26 x 26 40g, cervix distended
by hard vaginal plug, ovaries with corp. lutea, palpus
wide open, nipples med. large - no milk - post part
estrus.

skull only

4787

♂ " *darwini chilensis*

testes 5 mm white

216 x 112 x 28 x 27 33g. SV 3 mm

skull only

4788

♀ " *darwini chilensis*

Vagina open, with med. large, ut. 2 mm. no secret.
216 x 105 x 28 x 27 34g ov. with white corp. lutea,
palpus not open, Vagina muscular. early preg?

4789

♂ *Ph. d. rufescens*

Testes 5 mm, SV 3 mm

chromo

4790

♂ ♂

testes 12 mm SV 18

chromo

4791

♂ *Ph. d. rufescens*

Test 5, SV 3

chromo

4792

Ph.

test 10, SV 12

chromo

4793

♂ *Ph. magister*

Test 12 SV 23

chromo

4794

Ph. darwini

ut. juv.

4792-4794 no change of phenotype

Phyllotis magister

4795

♂ *Bolomys berlandieri*

Test 7 dark reddish, SV 7.

skull only

4796

♀ *Bolomys berlandieri*

ov. closed, ut. thin, ov. hemorrhagic, palpus closed.
157 x 66 x 21 x 14 20g.

skull only

4797

♂

"

"

166 x 75 x 21 x 12 22g. Test. 9, SV 7

possibly in container tag
+ -
* -

Reardon
1971

Catalog

6 km NE Tarata, 12,900 ft., Dept. of Tacna, Peru
Sept. 12

4798 ♂ Ph. modestus

test 7, SV 6

4799 ♀ " darwini

st. juv.

13 km NE Tarata, 14,700 ft., Dept. of Tacna

Sept. 13

4800 ♂ Ph. darwini

testis 3, SV 2

Sept. 14

chronose

4801 ♀ Ph. boliviensis

vag not open, ut. thin white no scars
pelvis not open

chronose

4802 ♀ Ph. darwini

vagina not open, ut. watery, no scars,
vagina thick, pelvis sl. open

6 km NE Tarata 12,900 ft., Dept. of Tacna

Sept 14 (caught Sept. 12)

chronose

4803 ♂ Ph. darwini

testis 3 mm

skull only

4804 ♂ " "

149 x 70 x 24 x 22 17g. test 4 mm.

skull only

4805 ♂ " "

153 x 75 x 24 x 21 15g test 4 mm

skull only

4806 ♂ Bolomys berlepschi

173 x 74 x 23 x 15 31g. test 10, SV 11, epidid
tubes confluent

13 km NE Tarata, 14,700 ft., Dept. of Tacna

Sept. 16 (caught Sept. 13)

chronose

4807 ♀ Ph. boliviensis

vagina not open, ut. thickish but no scars,
pelvis open.

Tarata, 10,150 ft., Dept. of Tacna, Sept. 16

4808

Zoemys alticola

10 mi. S Tarata, 10,000 ft., Dept. of Tacna

Sept. 18

Zoemys pantherinus

4809

Ctenoblepharis

open desert, afternoon

Sept. 19

skull only

4810 ♂ Ph. darwini

testis 4 mm white

96 x [0] x 25 x 24

SV 2 mm

skull only

4811 ♂ " "

203 x 107 x 25 x 25

skull only

4812 ♀ " "

ut. thin white no scars

ear tag 402

194 x 100 x 25 x 24 24g. ~~same~~ pline closed.

4813

Zoemys pantherinus

Ctenoblepharis

under stars, open desert, afternoon

4814 *Lepus pantherinus*
skull + foreleg
4815 *Ctenoblepharis*
Felis

~~under stone~~ dug out of burrow in bank dry wash
pick up, in cave near side canyon.

Sept. 20

skull only
4816 ♀ *Phyllotis darwini*

skull only
4817 ♀ " "

skull only
4818 ♀ " "

skull only
4819 ♀ " *magister*

skull only
4820 ♂ " "

skull only
4821 ♀ " "

skull only
4822 ♀ " *darwini*

skull only
4823 ♂ " "

4824 ♀ " *darwini* juv

Vagina not open, ut. juv.
185 x 97 x 25 x 22 23 g
Vag. open and muscular, ut. thin vascular, pelvis closed.
188 x 95 x 24 x 23 25 g
Vag. closed, ut. med., ut. with scars.
204 x 107 x 23 x 25 37 g.

150
150 x 80 x 24 x 18 15 g all juv.

165 x 85 x 25 x 20 17 g test 4 1/2 SV 2

all juv.

late preg 2 rts, left. 22 mm CR
215 x 112 x 25 x 27 50 g.

test 10 mm
227 x 117 x 26 x 27 45 g SV 14 mm

Sept. 21

chromos
4825 ♂ *Ph. magister*

on study grid in big dead cactus. Test 6
SV 5

4826 *Ctenoblepharis fulvopanthrinus*

NE

2 mi N Tarata 11,500 ft, Dept. Tarma, Peru

Sept. 26, 1971

4827 ♀ *Ph. magister* 224 x 123 x 29 x 25 48 g.
postoral streak; yellow-green chest. ut. slender, no emb.

skull only
4828 ♂ *Ph. darwini* 204
124 x 110 x 26 x 24 testis 4 mm.
30 gms.

sk. only
4829 ♂ *Ph. darwini* 225 x 121 x 26 x 24
testis 10 mm; SV 10
41 gms

skull only
4830 ♀ *Akodon boliviensis* in grass along asquira
ut. slender, no emb. 152 x 65 x 20 x 13 20 gm

SV 5 mm; testis 10 mm, gray

4831 ♂ *Akodon boliviensis* in grass along asquira 171 x 75 x 23 x 14 34 gm

skull only
4832 ♀ " " 160 x [59] x 21 x 14 28 g Vag. not open, uterus many scars

skull only
4833 ♀ " " 150 x — — — Vag. not open, ut. juv.

skull only
4834 " " 150 x 64 x 20 x 13 18 g. Vag. not open, ut. juv.

Prason
1971

skull only
4835 ♂ *Bolomys berlepschi* 175 x 74 x 22 x 12 33 g. testis 9, SV 10
skull only
4836 ♀ " " 154 x 63 x 21 x 13 20 g. vag. not open, ut. thin
no scars, pelvis closed

Sept. 27
4837 *Bufo strimmarum* Toad under stone 20 ft from reservoir
4838 Frog *Telmatobius* in reservoir.

Sept. 28
4839 ♂ *Akodon boliviensis* on grid along ascaris. Test 8, SV 10

Sept. 29
chrome
4840 ♂ *Phyllotis or andinum* tagged 423 testis 13, SV 16
chrome
4841 ♀ " " tagged 417 vag. closed, ut. with scars,
pelvis slightly open

13 km NE Tarata, 14,700 ft., Dept of Tarma

Oct. 2

4842 ♂ *Phyllotis darwini* caught on grid, Dead at 6:00 testis 12, SV 19
4843 ♀ *Akodon andinum* dead on grid during day at 10:00 no emb.
ut. with scars

Oct. 4

4844 ♀ *Akodon andinum* 10g. tagged 456 juv. - dead in trap
4845 ♂ *Phyllotis darwini* testis 3 mm tagged 458 dead in trap
skull only
4846 ? " " missing in trap set Sept. 14.
skull only
4847 ? " " " " " " " "

Oct. 5

4848 ♂ *Phyllotis darwini* ascaris in stomach up to 45 mm long.
skull only
4849 ♂ " " Tagged 462 test. 12, SV 18
skull only
4850 ♀ " " 228 x 115 x 27 x 27 30 g. Tagged 459 test 11, SV 14
6 45-mm ascaris in stomach.
vag. open, with small, vaginal plug, uterus estrus
194 x 102 x 26 x 24 29 g. pelvis wide open
skull only
4851 ♀ " " 198 x 102 x 26 x 23 30 g. vag. open, uterus 1 mm
no scars, pelvis not open
4852 *Tirolomys multiformis* juv. under stone with 4853-4856
4853 " " "

- 4854 *Pleurodema* *maculata* under rock with 4852-4856
- 4855 " Frog (spotted) "
- 4856 " striped frog "
- 4857 *Liolaemus atterlor* (pat.)
- 4858 " "
- 4859 " "
- 4860 Scrub from basal stem of long. leafed shrubby *Senecio*. Ridges orange, valleys pink
- chrome
4861 ♀ *Phyllorhynchus boliviensis* Oct. 7. uterus faint scars, palms open
- chrome
4862 ♀ " " " " with scars, " slightly open
- chrome
4863 ♂ *Alsodon andinus* Oct. 8 caught Oct. 4 Testis 9 SV 12
- chrome
4864 ♀ *Ph. darwini* gave birth to two young between 10/5 and 10/7
- 4865 *Phyllorhynchus gerobopygus* Oct. 10 4 mi. N. Tarata, Dept. Tacna, 3360 ft. under stone
- 4866 " " "
- 4867 " " "
- 4868 *Ctenoblepharis* sp. open desert by Carol
- Liolaemus* ?
- 4869 " ? " " " "
- 4870 *Tropidurus* *peruvianus* in mouse trap in rocky gully. 13 km NE Tarata, 14,700 ft., Dept. of Tacna, Peru. Oct. 12 (caught Oct. 5)
- 4871 ♂ *Ph. darwini* kept at Tarata Oct 5-12. test. 8, SV 6. Lungs & thigh in Bouvier's
- 4872 ♀ " " 3 small emb. Vag. open Ear tagged 464
- 6 km NE Tarata, 12,900 ft., Dept. of Tacna,
- Oct. 14
4873 ♂ *Bolomys berlepschi* caught by Benson • stomach white, grey, brown flecks. 166 x 71 x 21 x 13 26g. testes 10 SV 12

134 x 57 x 20 x 12 14g. uterine juv.

Oct. 15

dead on ground. seeds in stomach.

testis 3 mm

129. 135+60x21x12 129

netted by carol. 13 g. netted in Glyptis.

Oct. 21

stark gelb + grün

•

Ox. 21

2 mi W Cholla Lake, 14,000 ft; Dept. of ~~Public~~ Tucson

Oct. 22

Caught by 50 Benson

1 caught by S13 Benson
165 x 75 x 25 x 18 234

163 x 15 x 25 x 60 22g scars, Vagina mucronate, follicles
 caught by AK P. Vag. not open, int. blood-filled. Vag. mucronate.

163 x 73 x 24 x 18 21g Stomach green-yellow-green-speckled

caught by ACP. Vag. open, with pink fluid-filled, vagina immatura

168 x 11 x 242 x 19 20g.

05.22

Vag. not open. Vt. thin no score

-x-x-x- 220g 2 fetus left horn 20mm CR

- Tacna
- $\frac{1}{2}$ mi. W Challopalea, 14,000 ft., Dept. of Peru
Oct. 23
- 4892 ♂ *Odontomys leucogaster* caught by AKP 32g. T10 SV14
stomach grey-green-flecked
- 4893 ♀ " " " 31g. 3 emb. bumps

- Oct. 24
- 4894 ♀ *Ctenomys spinosus* Vag. open 3 embryos 15mm bumps.
280x80x40x7 290g.

- Tarata, 10,100 ft., Dept. of Tacna
Oct. 25
- 4895 ♂ *Mus musculus* caught in store
 $\frac{1}{2}$ mi. W Challopalea, 14,000 ft.,

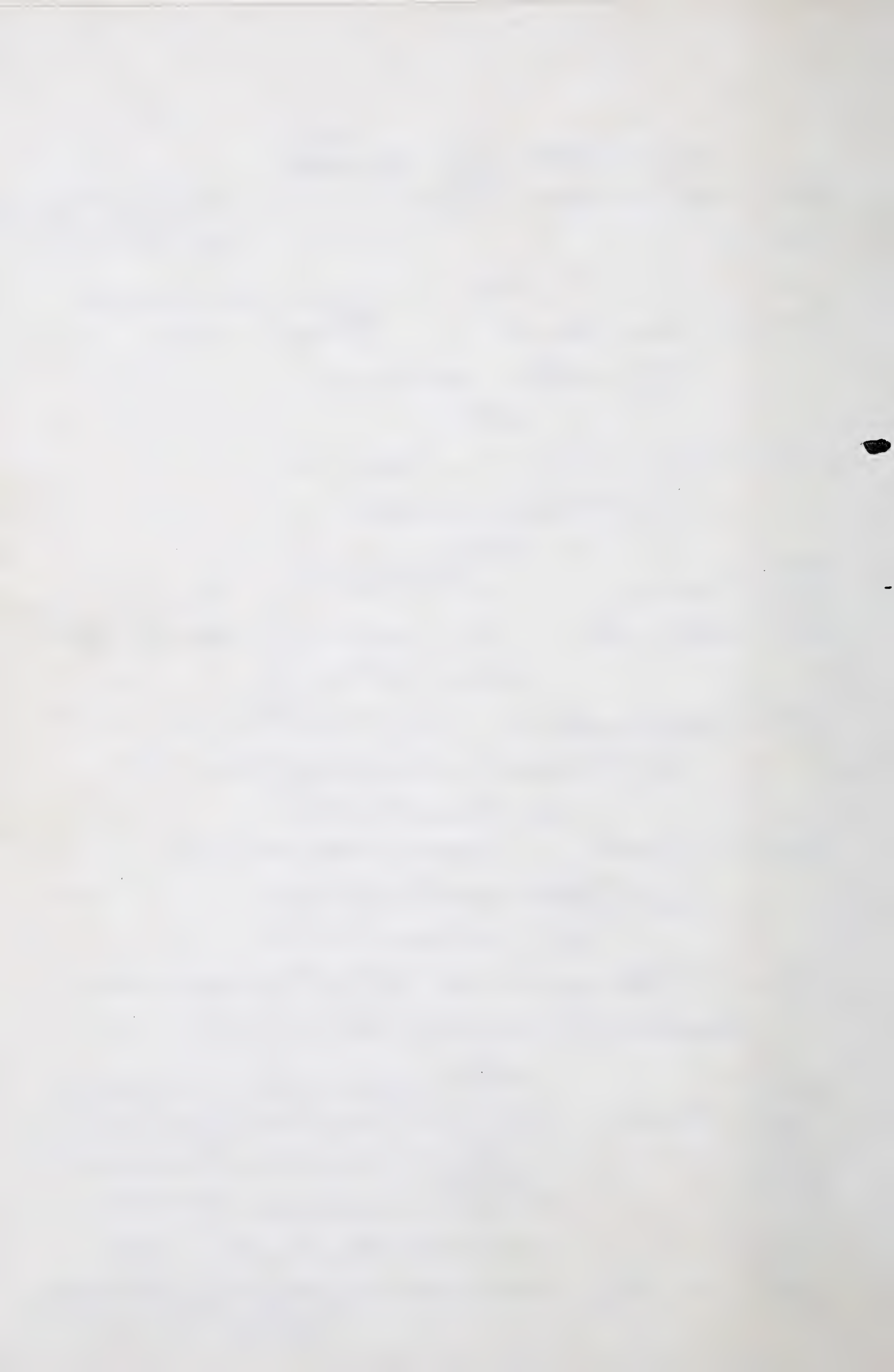
- Oct. 25
- chronos 4896 ♂ *Galeomys* caught on grid at night
145x43x20x22 34g - testes 9, SV 10
- chronos 4897 ♀ *Elgmodontia* 167x82x25x19 Vag. open, uterine fluid filled

- Oct. 27 (caught Oct. 24)
- 4898 ♂ *Phyllotis sublimis* 150x45x20x20 34g test 8 SV 10
1 mi. SW Anconmarca, 14,000 ft., Dept. of Peru, Peru

- Oct. 27 (caught Oct. 20)
- 4899 ♂ *Elgmodontia* 195x97x25x20 35g. test 10, SV 15.
 $\frac{1}{2}$ mi. W Challopalea, 14,000 ft., Dept. Tacna

- Oct. 28 (caught + preserved Oct. 24)
- 4900 6? Tadpoles, prob. 2 or 3 spp. Caught by Alison along Rio Maure.
Huancab Ontave, 12,900 ft., 40 km S. Maure, Peru, Peru

- Oct. 30
- skull only 4901 ♀ *Ph. osiaca* caught by S. Benson stomach buffy grey.
206x106x25x23 27g. Vag. not open. VT. prev. Pelvis closed.
- skull only 4902 ♀ " " caught by SB. stomach brownish
- skull only 4903 ♂ " " caught by SB 208x108x25x22 28g. Vag. not open, uterine prev., pelvis closed
- skull only 4904 ♂ " " 222x119x25x22 32g test. 4, SV 4 stomach green
- skull only 4905 " *sublimis* 235x125x26x23 34g. T. 4, SV 3 " white
- 4905 " *sublimis* 139x45x20x22 34g. Vag. not open. VT. 1mm uterine no seen.
Pelvis open. Stomach creamed green
weigh 7g



- skull only
4906 ♀ *Albodon boliviensis* Caught by S. Benson. Stomach coarse veget. + round worms, green not
151x61x20x14 17g. Vag. not open, prob. ut. scars. Stomach grey fleshed, not
skull only
4907 ♀ " " Caught by S.B. 148x64x20x13 17g. Vag. not open, ut. juv. green.
skull only
4908 ♀ *Bolomys amoenus* Caught by S.B. 165x70x20x14 21g Vag open. Uterus scars. dark green
skull only
4909 ♀ " " Caught by S.B. 140x60x20x13 15g. Vag closed, ut. juv. stomach coarse veg. matter

Oct. 31

- 4910 ♂ *Ph. osilae* Caught by S. Benson 221x110x26x22 35g. Test 5, SV 5 stomach greenish
4911 ♀ " " Caught by S. Benson Vagina closed. Uterus juv. no emb.
207x106x24x22 30g.
skull only
4912 ♀ " " Caught by S. Benson. Vag not open. Ut. immature
208x99x25x21 34g.
skull only
4913 ♀ " " Caught by S. Benson Vag not open. Ut. immature
208x104x24x23 30g.

Oct. Nov. 1

- 4914 ♂ *Bolomys amoenus* 150x62x19x13 22g. T11, SV14 dead on grid
tagged 612 dead on grid
4915 ♂ " " 153x61x20x12 20g. T10 SV13
chromat. Caught by S. Benson
4916 ♂ *Neotomys ebrosus* 187x72x24x17 50g. T8 SV10
skull only
4917 ♂ *Ph. osilae* Caught by S. Benson 230x118x25x24 37g T. 5mm.
4918 ♀ " " Caught by S. Benson 215x111x26x22 30g. Vag. not open, ut. juv.

Nov. 3

- skull only
4919 ♀ *Bolomys amoenus* Uterus 1mm but not preg. caught 11/2
23g tagged #618, dead on grid.
4920 ♀ *Phyllotis osilae* 195x95x25x22 23g uterus juvenile
4921 Small tadpoles from shallow pond along road
4922 medium tadpoles from deep pool in tiny creek above camp

Tarata, 10,100 ft., Dept. of Tarma, Peru

Nov. 4

- 4923 ♀ *Albodon boliviensis* ut. very slender, no emb 154x67x20x13 19g
4924 ♂ " " 168x71x21x13 24g T6, SV4

2 mi. NE Tarata, 11,500 ft.

Caught Nov. 5, killed Nov. 7

- skull only
4925 *Ph. magister* 275x140x29x28 83g. T11, SV15
skull only
4926 *Ph. " "* 295x157x32x27 68g. T11, SV5

skull only, morro Sana, 200ft., 65 km W Tacna, Dept. of Tacna, Peru
4927 ♀ Ph. darwini nov. 9 34g. caught by Benson. Vag. open. inf. med. - large, ut. wds with recent scars.

morro Sana, 1000ft., 65 km W. Tacna, Dept. of Tacna

nov. 10

4928 ♀ Ph. darwini lactating, pregnant, 6 13-mm emb.,
skull only, 228x115x25x25 67g. stomach packed with food?
4929 ♀ " " 42g. vag. open. 42g. 2 25-mm CR embryos.
skull only, 4930 ♂ " " 30g. T 8mm/pink, SV 8mm.
skull only, 4931 ♀ " " 25g. Vag. open. 7 emb., largest 5mm.
4932 ♀ mus musculus 154x65x21x14 25g. Vag. open. 4 emb.

nov. 12 (200ft.)

skull only, 4933 ♂ Ph. darwini 46g. T 10, SV 15 caught by Benson in rock outcrops

morro Sana 200ft., 65 km. W Tacna, Dept. of Tacna

nov. 13

4934 Tropidurus peruvianus near camp.

4935 " "

4936 " "

4937 " "

4938 " "

4939 " "

4940 " "

4941 Snake Dromicus tachymenoides

morro Sana, 1000ft., 65 km W Tacna

nov. 12

4942 Snake Dromicus tachymenoides among man-root and rocks.

morro Sana, 10ft., 65 km W Tacna

4943 Lizard shot by Benson on black rocks above surf.
Tropidurus melanopleurus

1931

13 km NE Tarata, 14,700 ft., Dept. of Tacna
nov. 15

4944 ♂ *Alodon arduri* caught by AKP. 121 x 43 x 19 x 13 15g. T9 SV12
Tarata, 10,100 ft., Dept. of Tacna, Peru.

nov. 15

4945 ♀ *Alodon boliviensis* caught by Benson 148 x 65 x 21 x 13 15g. Intestines juv.
chromos caught by Benson
4946 ♂ " " 176 x 75 x 22 x 13 23g Testes 7, SV5

13 km NE Tarata, 14,700 ft., Dept. of Tacna

nov. 22

4947 *Siolaema* ^{*mucroni*} *multiformis*? under yareta on study grid.
morro Sama, 200 ft., 65 km. W Tacna, Dept. of Tacna

caught nov. 12, killed nov. 24

4948 ♂ *Phyllotis darwini* saved lung + thigh + heart. 208 x [92] x 24 x 23 54g. T10, SV18
4949 ♀ " " saved lung + thigh tissue pelvis open 193 x [80] x 25 x 23 45g nosed. Vt thick

13 km NE Tarata, 14,700 ft., Dept. of Tacna

caught nov. 15, killed nov. 24

4950 ♂ *Phyllotis darwini* saved lung and thigh tissue 232 x 119 x 26 x 24 53g T8m, SV10
4951 ♂ " " saved lung + thigh tissue 233 x 112 x 27 x 26 69g. T11, SV16

Tarata, 10,100 ft., Dept. of Tacna, Peru

4952 4 or 5 tadpoles from a pond at edge of town. Kept about 2 weeks. Preserved 12/1
4 mi. N Tacna, 3360 ft.,

nov. 29

4953 *Ctenoblepharis* sp. lizard 4 snakes at tent site, 50 ~~ft~~ m from grid.
13 km SSW Pizacoma, 13,200 ft., Dept. of Puno

Dec. 4

4954 *Hesperomys* Baby bat (chocolate) found alive on floor of cave by Carol Pearson

Pearson
1971

6 mi. W Parotani, 10,600 ft., Dept. of Cochabamba, Bolivia

Dec. 7

chromos

4955 ♂ *Ph. wolffsohni* 258 x 137 x 26 x 23 45g, TT SV 7

4 mi. N Parotani, 8500 ft., Dept. of Cochabamba, Bolivia

495

chromos

4956 ♂ *Ph. wolffsohni*

chromos

4957 ♀ " "

Dec. 8

38 mi. NE Villazon, ^{12,200 ft.} Dept. of Potosi, Bolivia

Dec. 12

4958 *Liolaemus* sp. lizard ' on open stony plain

4959 " " " "

4960 " *Liolaemus* sp. "

4961 " " " "

12 mi. NW Pucayachi, 10,000 ft., Dept. of Tarija, Bolivia

Dec. 13 (caught Dec. 12).

chromos

4962 ♂ *Ph. sp.* testi 10; SV 6 ~ 230 x 120 x 26 x 25 42gms.

chromos

4963 ♂ " " testi 9; SV 7 ~ 218 x 112 x 25 x 24 39gms.

1/2 mi. N Tilcara, 8500 ft., Dept. of Jujuy, Argentina

Dec. 14

chromos

4964 ♀ *Andinophis* 272 x 120 x 29 x 26 90g. huge ovaries. uterine scars.

Pearson
1971

Tilcara 8000 ft., Dept. of Jujuy, Argentina

Dec. 15

chroma

4965 ♂ *Phyllotis caprimus*

220 x [105] x 27 x 25 48g. T10, SV14

chroma

4966 ♀ " "

234 x 116 x 25 x 25 46g. lactating

chroma

4967 ♂ *andimys*

272 x 145 x 27 x 25 60g. testis 13, SV 22

chroma

4968 ♂ *Ph. caprimus*

282 x 148 x 29 x 26 62g. T12, SV15

La Cumbre, 3200 ft., 25 km NE Chumbicha, Prov. Catamarca

Dec. 20

4969

skull only

4970

Leptotyphlops melanotomus
Worn snake

body was, dying sluggish on
ground in early a.m.

Guinea pig

under thorn fence in steel trap

Dec. 22

chroma

4971 ♀ *Sraomys* juv.

17g. juv.

16 km NW Chumbicha, 3500 ft., Prov. Catamarca

Dec. 24

chroma

4972 ♂ *Phyllotis darwini*

testis 12, SV 15

chroma

4973 ♀ " "

lactating

4974 ♀ " "

4 emb 7 mm diam

chroma

4975 ♀ *Obodon*

uterine scars

17 km NW Chumbicha, 3750 ft., Prov. Catamarca

Dec. 26

chroma

4976 ♂ *Sraomys*

100g. T14, SV16

Cuesta de Zapata, 1875 m, 25 km NE Tinogasta, Prov. Catamarca

Dec. 27

chroma

4977 *Sraomys*

chroma

4978 *Ph. darwini* ?

122 km NW Tinogasta, 13,300 ft., Prov. Catamarca, Argentina
Caught Dec. 28, Prof. Dec. 31

chromos

4979 ♀ Ph. sublimior or juv. darwini.

no emb.

chromos

4980 ♂ Ph. darwini

T11 SV18

chrom

4981 ♀ " "

4 late fetuses

chromos

4982 ♂ albedovarandianum

T10, SV9

5 mi. E Yampuz, Canete Valley, 8340 ft., Dept. of Lima, Peru

pick up shell only. picked Aug. 21, 1921, cataloged Jan 31, 1922.

4983

Copestus rep

Recently killed along road.

I find no record of these numbers.
I didn't go anywhere, and probably
didn't collect. The missing numbers
may have been dropped to make
sure I didn't overlap where I
resumed collecting.

The attached pages all relate to
the standard trap lines and the
acorn collections at Hastings.
I don't know where these pages
should go.

Pearson, O. F.

1971

Journal

Peru

Pearson
1971

Papa León Tree, Dept. of Lima.

Aug. 18

Left Lima about 3:30 pm after 3 days of stupid negotiations re. a "fianza" for the car so we can go to Chilo etc. Numerous conferences with auto club, banks etc. Finally arranged a guarantee with Banco Popular (200,000 soles). Left Bob Jones un-numbered dolphin + seal skulls with Batanero's (700 Carillon) for packing and shipping. Tea with Manuel Pleguez yesterday. He says it has been a wet winter.

Camped ~~at~~ in the canyon above Papa León Tree. Lots of green. Numerous small moths flying at dusk, numerous big sphinx moths, heard crickets, saw fox, probably the larger one, who was squeezed up to about 50 feet. Saw night hawks. Drizzle continuous; didn't see the sun once in 3 days in Lima. Sphinx moths feeding on tobacco. Carol saw hummer

Aug. 19

Wee drizzle all or most of night; plastic bowls left out had several tablespoons of water in each. Heard barn owl during night. Drip off car collected over one bowl of ^(2 cups) water in 30 minutes.

Drove to the study area south of Chilca at 10:30, wee drizzle most of way. The ground on study area was quite wet, damp down to more than 4 miles. Jeep or something had wandered over much of the area. Garden #1 of weighed plants was near a disturbed area, and I'm not sure we found it but weighed plants anyhow.

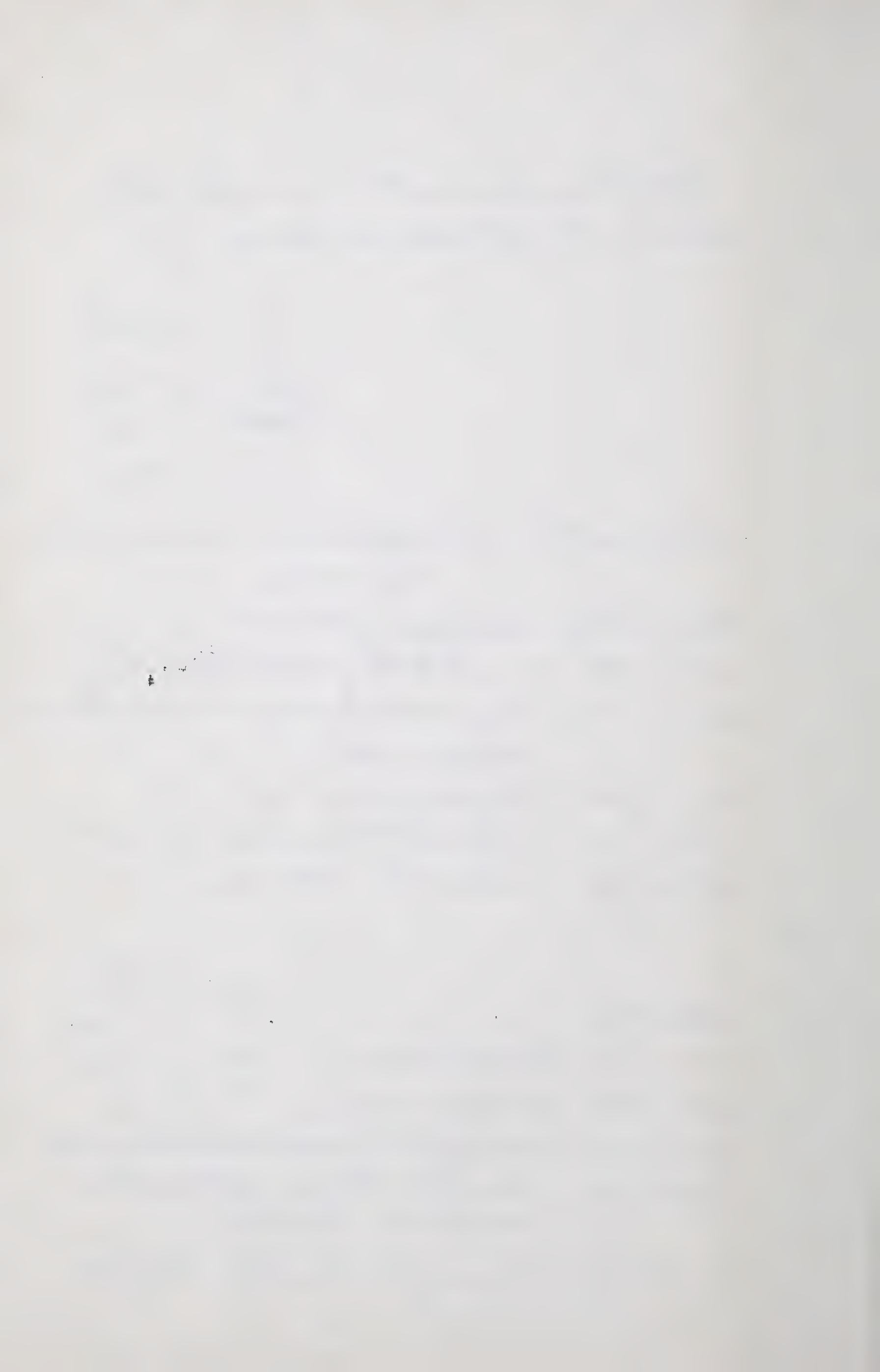
Visited Tillandsia study area at 11:30 a.m. alt 370 ft.
Garden #1 with jeep tracks a few feet away:

1	∞		
2	○	∞	18 9
3	∞ and	∞	18
4	∞ small	○	17
	∞	∞	16

- #1 (maybe inflorescence) - 150 g small double, very dead remains of a larger stalk.
- #2 - 563 g - large single - 6 rows dead.
- #3 - 455 - small double (one broke off early)
- #6 - 575 - large double with old flower stalk and many seed pods under it.
- #7 - 345 - large single, 6 rows dead.
- #8 - 570 - triple with old seed head. 6 or more old leaves
- #9 - 593 - cabbage head. - lots of dead.

Garden #2

- | | | | | |
|--|----|---|---|----|
| | 11 | ∞ | ∞ | 20 |
| | | | ∞ | 19 |
| | 12 | ○ | | 18 |
| | 13 | ○ | | 17 |
| | 14 | ∞ | ∞ | 16 |
| | | | ∞ | 15 |
- #11 - 763 - large double, lots of dead
- #12 - 205 - med. single, 6 rows dead
- #13 - 385 - 7 rows dead, lowest $\frac{1}{2}$ - alive, whole had been grazed.
- #14 - 360 - med. with smaller side, next to oldest living row was "grazed". Lots of dead
- #15 - 595 - large double, old old seed head, lots of dead.





Tillandsia Garden #2, before weighing. 8/19/71



Tillandsia Garden #1. 8/19/71



Tillandsia Garden #2, after weighing. 8/19/71

Pearson
1971

- #16 - 445 g - 8 rows dead plus dead fruiting body on side
#17 - 445 g - large single, 8 rows dead
#18 - 640 g - ear tag is in 3rd row down of dead, at least 8 rounded
#19 - 695 - triple, 10 rows dead
#20 - 185 - small single, 9 rows dead ~~Ear tag is in~~

Garden #2 was fine, Garden #3 on myrral's trap line had been completely stripped; ~~the~~ all the plants for about 1 acre raked into long heaps. Saw Burhins tracks, fox, small mice, hopping bird, sheep or goat, while weighing plants saw wild boar and acted like a flea, and two redwings (or something similar). at 1:30 wet + dry temps were 57°-56°.

Left at 1:30 pm and drove to 2800 ft above Zúñiga in the Cañete Valley. Had wet + sloppy up to about 2000 ft. (and cloudy - drizzly), but clear at about 2500 ft.

aug 20 Camp (after dark) at good spot along river with caña, pepper trees, willows, many mocking birds. Early evening clear but fog gathered about 9:30 - 10 pm, morning completely fogged. Parrots.

Drove up Cañete Valley, with stops for Carol's milkweed + bugs, arrived at our old campsite above the yungos turnoff but below the bridge, about 1:30 p.m., altitude ⁸³⁴⁰ 8340 ft. Stopped in the ^{caña brava} blooming scotch broom, pepper trees, columnar cactus, pastures, Spanish moss and at least 2 other species of Tillandsia (one of them small leaves with blue blossoms), agave, and yatropha "trees"

in bloom, lots of stone walls. The bridge, and its cluster of huts is known as Puente Tingo. Our camp is about 1 mi. downstream from it.

at 3 pm drove up through the gorge above the bridge and set about ²¹~~25~~ *Shermans* (small) baited with oatmeal in stone walls right along the road. This is a little below our trapping site 2 yrs ago where myrmec caught *Phyllotis moysen*. Habitat was cultivated field, weeds, some bushes nearby, some tangles of thorn twigs, and a small unoccupied hut-shelter (scotch broom, peach trees, guard plants, weeds, *Candelabra cactus*).

also put 14 small *Shermans* with oats across a log bridge along terrace walls, grass and weeds; this is about a mile downstream from the gorge.

Lots of small bats flying well before dusk. Ali set 6 traps along walls. Night clear. Saw one mouse while jacklighting.

aug. 21

Morning clear. Ali had 2 mice in her traps, two in the traps at the stone terraces below the gorge, and two above the gorge.

Rosetta to localities in this valley:

	<u>Speedometer</u>	<u>Elevation</u>
Camp along river, same as in 1969, recorded as so many miles from Yauyos	597.6	8,340 ft
Puente Tingo (bridge across Rio Cañete)	598.8	8,470
Terrace trap line below the big gorge, log bridge	601.9	8,870
Trap line above the big gorge	604.1	9,080
Trap line of OP and AK and myrmec <i>Georg</i> with <i>Phyllotis moysen</i>	606.0	9,220
Town of Alis	—	10,360

Season
1971

Left camp about 7 a.m. and ground up the valley, through the 1st gorge. Truck very tired and had to make running starts and get out and push simultaneously. Shopping and photo-ing in charming Alá, then on up over the divide (15,000 ft). Truck couldn't make it over top so an hour or more delay while I cleared ^{gas} filter and re-set the points (which fixed things considerably). Finally over the top, AK and APP with sirroche. Lots of ichu country, much of it heavily grazed with alpacas, llamas, and sheep. Little if any Festuca orthophylla and no tola, almost no yarito. Saw mouse cross the road. Lots of Bolivian geese, some lopewings, gulls, ibises. One swampy lake-meadow had 100? geese feeding on it (in pairs?) and apparently courting. Saw no tinamous although seemed good for Nothofraga.


Camped at 11,160 ft in a recently harvested grain field, set 19 small Shermans around heaps of ~~stones~~ in the steep fields. Some heaps with Barbieria and a stiff-needled bush with ericaceous blossoms.

aug 22 Clouded up overnight. a.m. 44°. my traps held 8 Calomys. Anita had 6 traps out and caught 2 Calomys. Drove to Huacaya for lunch then down to the Rio Huatara where we camped at 9000 ft in cactus-scrub near the river (very muddy). The land west and south of Huacaya is heavily used; fields wherever possible, grazing by sheep + cows + burros.

I put out small Shermans among walls + boulders, opuntia, tall cholla cactus, thorn bushes, other shrubs, and

closely grazed fields. Lots of small stones, some of which have been piled into heaps.

aug. 23

Light rain during night - enough to settle the dust. Temp at 7 am 50° cloudy. Vegetation is open, 12-foot cholla trees, 10 ft. cardelabra cacti, willow-leaved shrubs, spineless *Berberis* with yellow berries this size , a spiny *Berberis*, a very spiny no-leaf bush (opposite ~~leaves~~ ^{spines}), small arborescent *Tillandsia*, agave, and other shrubs + rocks + grass. my 30 folding Shermans, 18 non-folding, caught 1 *Phyllotis* + 3 *Calomys*. Anita with 20 traps and 10 large Shermans + 10 small Shermans caught 2 *Phyllotis* and 1 *Calomys* (all in traps). ~~For~~ Carol caught *Calomys*.

Left about 8 and drove down the Valley as follows: Camp mileage 53.7, cross river 56.4, Mariscal Caseres 56.8 (8,650 ft), Lots of Coccol insects at 7,580 ft. Between where the road crosses the Rio Mantaro and H. Wanta is some nice badland desert. Camped about 2 miles air line ~~east~~ SE of H. Wanta, on a hill, overlooking the valley; under a pepper tree. Terrain is arid, lots of scattered large pepper trees, plowed fields, stone walls, and cacti of numerous sorts. Put traps along stone walls.

aug 24

a few sprinkles overnight. Day partly cloudy. my 57 small Shermans held 3 *Akodon*, 6 *Phyllotis*, 8 *Calomys*, Carol had 5 *Calomys*, 3 *Phyllotis*.

and 2 Akodon, ants in snaptraps had
1 Phyllotis and 2 Calomys, parrots feeding on mollé.
Skinned all day. Biting sand flies yesterday and
today.

Aug. 25

Cloudy overnight. Left at 8 a.m. and drove all day.
Ayacucho at 9:30, camped between Chimbasso and
Andahuaila at 7:45 p.m. miserable road. Crossed
two ichu-covered "plateaus" without much grazing.
no alpacas or llamas, some horses, cows,
sheep. Lots of arid scrubby country. Chimbasso
Valley & fields still charming; it is the site of my
earlier photo of cottage & poplars & mountains. Camped
after dark.

Aug 26

Woke in a pasture in a drizzly fog. Left
early and drove through mist & clouds for a couple
of hours ~~then~~ over the third icu mtn. range, ~~then~~
Reached Alvarado about 2 p.m.; saw flies at river,
then up to the 4th cumbre. magnificent mountains.
Camped at dusk overlooking a pueblo in a
deep Valley (Cachara) and with snow-capped
mountains above.

Pearson
1971

Aug 27 Frost on ground & tent and ice in coffee pot outside; temp at 6:30 a.m. near 0°C. Took pictures of Carhara then off to Cuzco about 3 p.m. more of same kind of country. Cuzco different, probably because a center because of the proximity of large areas of level land low enough for cultivation.

Aug. 28 off for mountain Picchu by train at 7 a.m. Arrived 11 a.m. and reconnoitered for trapping possibilities and for salamanders. Everything rather dry, in fact the only water was in the few bromeliads up in the larger trees, and because of the extreme steepness of the slopes we were only able to reach one good ^{big} bromeliad and a couple of small or half-died ones. The good one contained water, debris, assorted spiders, ~~also~~ larvae, etc. plus one big dark iridescent earthworm. Just before dark set 46 small folding Sherman traps baited with crushed wheat. Most sets were on the bouldered brushy slope above the ruins (South). Vegetation was bamboo, orchids, bracken ferns, assorted shrubs waist to shoulder high, large scattered boulders, a little grass. Pretty dry, ^{also & this along a} weedy-grassy terrace wall.

Aug 29 Picked up traps at 6:30 a.m. Not one trapped. Trace of dew, but temperatures mild, even at night. Looked at Inca ruins and climbed to top of Hurray Picchu, flipping rocks looking for salamanders. Only zoological find was vampire bat droppings in a dark cave-like room under the tower in the ruins. Left for Cuzco 3:15 and 6:30. Lizards on top of Hurray Picchu.

Aug. 30 Having arranged to do shopping today (Monday) we found that it was a fiesta day, and couldn't even get car greased. Stained slides etc. Visited Sacahuaman.

Aug. 31 Left about 9 a.m. and drove to ~~between Santa Rosa~~ Chuguibambilla and camped on a flat bunch-grass plain. Stopped for lunch about 2 p.m. near a stream heated by hot springs. Numerous Cavia tschudii running among large bunches of a very spring grass. Caught a large ♂ Siolaemus under a stone, he was warmish and fat, but saw none outside in spite of the fact that it was sunny; altitude about 13,000'. Much threshing activity between Ureos and above Ocoatlupel. Biggest change from previous trips is the large number of cattle at both low and high altitudes. Cows where I would have expected alpacas & sheep.

Sept. 1 Night clear & cold; 15° F at sunrise. Drove to Hlave with various stops for fishing (none), shopping, and car lubrication in Juboca. Camped about 2 miles up river from Hlave amidst dry bare, plowed fields.

Sept. 2 Night clear, light frost, Temp 6 am 32° F. Drove to the school teacher cluster of huts about 10 miles from Hlave, but nobody could tell me anything of the fate of the students in my photo of 1955, although the teacher still lives next to the school (but he wasn't home).

Stopped at the campsite in the gorge of

to Rio Huerfano above Hda. Paucunani. Looked
in caves on the north side and found one good
Oreotrochilus nest (lined with ~~leaves~~ big fluffy
down). no eggs. Chusquea blooming up at
the hilltops but we didn't climb up.
Sepidophyllum in full bloom. a passing native
said the Reforma Agraria had taken over
Paucunani and that they had very few animals there.
Ali caught a 17" ad a 12" brown trout & D.

Drove across Pampa Andeata and saw
no guinea pigs or sign of Ctenomys peruanus.
Then beyond Wapacuz past pampas of
pure Festuca orthophylla, pure Tetraglochin
(or _____), and mixtures of the two, and
pampas and slopes of Festuca and Sepidophyllum.
Everything pretty dry. Camped at 14,000
ft along a stream flowing away from the lake.
Tola + Festuca + Pycnophyllum plus a
swatthering of heavily grazed dwarf grasses
Vicia grass along the stream. Several
Ctenomys droppings but no fresh sign.
Put out large & small Shermans.
Moon one night short of full.

Sept. 3 Carol + my traps held 1 Chrocomys and 1 _____, ant's.
1 Chrocomys, 1 Ph. boliviensis, and 1 Bolomys berlepschi. night
clear, 14°F at 6 am, almost no frost (unlike last night
near Hlave where car was heavily frosted, plus grass and

tops of dirt clods. Some ice on river. Vegetation here is about an equal mixture of Festuca orthophylla, Lepidophyllum quadrangulare, another yellow-flowered but open-leaved tola (more abundant than quadrangulare), lots of Raynophyllum, a few tiny spiny Margaritopsis or Tetraglochin only a few inches tall, and a sprinkling of heavily grazed short grasses. Ctenomys is here, eating branches of the Lepidophyllum; Puna minor, ducks.

Left camp at 11, which was 1 mile NE of Challapalca and the Rio Mauri. Many two-toes between there and the divide, auto and, with drifting sand in places. The divide is really double, both about 15,400 ft and 8 miles apart. The eastern pass is almost totally barren, much good gareta between the two. Saw one vicuña and some droppings, no tinamous or Vicuña. Lots of good tola + Festuca east of the passes, mileages and altitudes as follows:

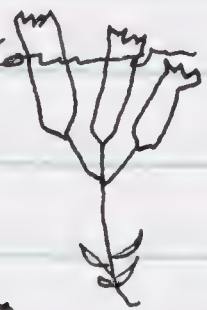
	<u>speedometer</u>	<u>altitude</u>
Rio Mauri	653.3 miles	13,880
Pass #1	662.0	15,420
Pass #2	670.6	15,380
Beinson Pampa above Tarata	685.9	12,900
Lower Pampa	687.7	12,600
1st Coctus (Cachilebra)		12,350
Thorng Bushes		12,250
my Camp from 1951	692.5	11,540
Eucalyptus		11,200
mollé		10,400
Tarata	699.2	10,320

arrived Tarata about 1:30 p.m. It has been "occupied" by the army, which will make finding a headquarters difficult.

Sept 4 Morning in Tarata looking for a house to rent, so Luke then drove up the hill to our old camping place that we used to call 1.2 miles N Tarata. From topo sheet looks more like 2 miles N. Elevation still due north (checked it right by Southern Cross). Lots of hummer flowers in bloom and at least 4 species of hummers here, plus Diglossids. Carol saw at least 19 species of birds here, I skinned and Anta & Carol put out traps (45 small mammals and 70 museum specials).

Sept 5 2 mi. N Tarata, 11,500 ft. [\approx 1.2 mi. N of previous trip]. Temp at 6 a.m. 36°. Anta's & Carol's traps held only 1 *Phyllotis magister* and 1 *Ph. darwini* (and 1 toad). Skinned and reloped and watched hummers along the asqueña. 4 or 5 species right in camp, plus Diglossids. The hummer bushes follow the asqueña, and the hummers don't seem to utilize the bushes on the dry slopes. Photos of "montane vegetation". Vegetation in photos knee-high to waist-high bushes such as *Bauhinia*, a very slender small-leaved one like *Lepidophyllum quadrangulare*, a long-leaved (toothed & slender) with puffy dandelion seed, fluted cactus up to 6 ft tall with large yellow bloom, a small tree cholla up to 5 ft., lots of tiny jumping cholla only a few inches tall with spherical joints, a few tiny opuntias, a bush with leaves up

to 7 ft. tall, greenhorn up to 6 ft, and the big red-tubed bush of the asequias up to 8 ft and even with a few blossoms. The "soil" is very stoney with almost no soil, scattered weeds & grass, especially ~~common~~ a 5-inch high weed with empty seed pods.



Everything very dry, also Ephedra.

along the asequia the bushes go up to 15 ft: greenhorn, the crimson flowered bush with $2\frac{1}{2}$ " corolla, a red-flowered (tubular) malletoe, and an orange-flowered climbing bush with compound leaves and tendrils at the end of each leaf. also grass and even ferns along the asequia. also an 8-foot bush with flower buds like cactiflower.

correction: The hummers do work away from the asequias.

One tree along the asequia is 15 ft tall and has a trunk 2 ft. in diameter; has small leaves like Polyalthia and blossoms (white)



life size

Sept 6

Temp. at 6:30 a.m. was 25° , no frost. my traps, 47 small ~~mouse~~ ^{shrews} ~~shrews~~ and 12 large ~~shrews~~ ^{shrews} set in good places along Terral walk caught 3 Bolomys berdinschii (2 at one hole and one at the next set) and one Phyllotis. Anita. Anita's traps along the asequia (8 large shrews, 3 rat, 19 mouse species) caught 1 Akodon boliviensis (in coarse green grass along asequia, 1 Andersonia, and 3 Myiarchus (none in rocks, one of them in the coarse green grass).

I summed and left camp about 10 a.m. to return to Tacna to negotiate for a house. all day negotiating ... and waiting.

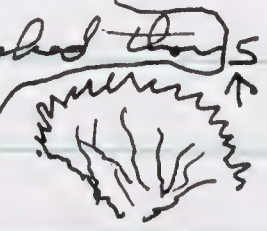
Sept 7

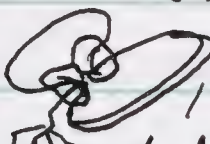
more negotiating, then off to Tacna to talk to the owner of the house of our choice: Sr. Daniel Savala, who turns out to be an aged man in a living room furnished with shiny vinyl furniture, black velvet paintings on the wall, a shiny porcelain urinal on the coffee table. Buen día.

Stopped at the Tacna Mercado etc, left at 5 p.m., camped a couple of miles north in Tillandsia desert. Set one pot trap (tiny pot traps everywhere) and about 25 museum specials just before dark.

a Prof. Gran? and his wife, encountered in the middle of the Tillandsia at noon, an expert on Bromeliads, says this is the type locality of this Tillandsia, but none are in bloom.

Sept. 8

night cold, breeze from north. we are 3 mi N Tacna. The Tillandsia, narrower leaved and tighter packed than latifolia, are in very distinct crescents  aiming south. Our campsite pitches down slightly toward the south, but ^{on} a rise to the south of us the crescents still aim south uphill. Only the terminal heads are living, the older side branches are dead, no "seedlings" here, or young ones, no buds or blossoms.

or even signs of old seed pods. Soil is powdery,
completely dry, only a few inches deep over clay.
Other plants include numerous small fleshy rooted
succulents , a clump of small spiny cacti, a few
scattered tufts of the brick-red steel-weed *Lobelia*,
and some powdery *Lobelia*. Lots of arthropod holes in the
ground, mostly empty, but a few with spiders, dead
beetles, and one with 2 live gophers. Dead snail shells
common, 2 live snails stuck to side of a rusty oil drum.
Gophers not uncommon under tin etc at trash heaps.
Lots of tiny fox tracks, large dog tracks, *Burhinus* tracks
(rare). Under clumps of *Tillandsia* we found only a few spiders;
I saw no silverfish here although Carol saw some yesterday a
little farther up the road. Found one large scorpion tail. Carol
saw a hummingbird. Fox droppings contained mostly scorpion, snail
shell, insect legs, hair, and one unidentifiable small rodent.
The hard layer under the surface powder is covered with white.
Even on side hills the crescents face south, city was in fog at 6:30 a.m.
arrived Tarata noon and moved into house no. 35 28th of July.

Sept. 9

Cloudy until about 8:30 a.m. Skinned and house-cleaned &

Sept 10

Tarata. House cleaned etc., then left for mara arriba at 2 p.m.
Camped at "Benson's Pampa" 3 p.m. (see his photo 8/5/68). We
make it 12,900 ft., 6 km NE Tarata, named appropriately on the
topo sheet "Queñopelaga" because *queñoa* (*Polylepis*) is
the dominant vegetation and there is a lot of harvesting of
it hereabouts. I put out just before dark 41 small
Sherman baited with a mixture of cracked corn and

natural, 2 large Shermans, and 2 ^{steel} jump traps. The ~~jump~~ 6 large Shermans were at a road-retaining wall where there was a large accumulation of viscacha-sized droppings. All sets were at talus below road or retaining walls.

Jacklighting at 8 pm saw nothing, but one of the big Shermans had a big abrocoma in it.

Auto put out museum specials and small Shermans at Queña clumps and rocky places.

Sept. 11

Night clear & calm, -4°C inside car at 6 a.m., ice in bucket. Auto caught 1 andersoni, 3 Ph. magister, 1 Ph. darwini, and 2 Bolomys berlepschi - all except 1 Bolomys in museum specials. I caught darwini, magister all day skinning. The darwini look like rupestris. Sunny all day. Put out 25 large Shermans along road walls below camp, baited most with cracked corn + oats + Lepidophyllum blossoms. Also left the abrocoma trap in place, and the pit trap. A few feet from the abrocoma trap this morning was a Ph. magister and this evening at 8 pm a Bolomys berlepschi was in the abrocoma trap in the wall.

Sept 12

My traps held 7 mice: 1 Bolomys berlepschi (in the abrocoma trap) Ph. darwini, Ph. magister. Viscacha tracks in the road below camp. Auto with 20 large Shermans among "natural" rocks, greñas etc north of the pampa caught 1 Bolomys and 1 darwini. Temp inside car in my skinning tent at 6 a.m. was -6° , temp. outside -2° , ice in pots.



camp is at the edge of a "pampa" on a narrow ridge ($\frac{1}{4}$ mile wide) between two very steep deep canyons. In the center of the ridge is a sloping, almost bare "field" with nothing growing more than a couple of inches tall, perhaps 4 acres. Around it is a Polykopia "forest" - really bushes up to 10 feet tall but some with "trunks" up to 6 or 8" diam. and big enough to attract woodcutters. These are clearly dominant, bare & gravelly & stony in between them, but with numerous blooming Lepidophyllum quadrangulare. Also cushion cacti, ^{orange flower} tiny grass tufts, low Ephedra, ^{Baccharis bushes} flush leafless dandelions (in bloom), and a grey hairy all very dry and heavily grazed. On both the north and south faces of the ridge are more bushes of composites, the red-tubed Potagora flower etc., plus grass clumps, less heavily grazed. The seemingly barren pampa is heavily used by llamas, birds, and a large lizard lives under a loaf-sized rock in the middle of it. At the upper edge of the area a few small yareta come in.

Sept at 1 km for mas arica. Polykopia goes much higher, not much bunchgrass. Then over the first summit and camped at 13 km NE Tarate, 14,700 ft amidst gorgeous yareta - Lepidophyllum garden at base of an igneous cliff. Put out 25 large shermans baited with oats + corn + Lepidophyllum flowers + Sesuvium blossoms. ants put out 40 large shermans among big boulders.

Night clear. -2° at 7 pm. just before at 8 pm saw one viscacha.

Sept 13

Blustery wind came up late during the night. Temp at 6 am outside was $+1^{\circ}\text{C}$, inside car -2° . My traps held

1 Phyllotis darwini, anted bed 1 darwini and 2 abodon
condimus. One of these was standing in front of the
trap and was chased into it; about 7 a.m.

The vegetation here is almost pure yareta and
Lepidophyllum quadrangulare, with a few mats
of Pycnophyllum and a few crevice plants. Saw
^{isolated} vescica + Geolaemus (one). Carol climbed up to
a cave above camp and found 2 Oreotrochilus nests,
one of them being visited by a female (but too
high to check contents). Chiquiragua nearby. She
also scared a ♂ Oreotrochilus out of a crevice at dusk.

Had a dandy yareta campfire last night, completely
silent, and still coals in a.m.

About ~~noon~~ ^{nine} a.m. packed up and drove $\frac{1}{4}$ mil
down the road to the spring and set traps for
Anisognathus boliviensis and Peromyscus. Saw 3 or
4 Anisognathus sunning, and some Seiurus adenophylloides
that had been "barked", but probably the work not
of Peromyscus but of Anisognathus. Trapped 2 by 11 a.m.,
started for Tarata and, after a few stops, arrived
1 p.m. Squashed in the road at our campsite ~~was~~
at Quesñapalza (6 km NE Tarata) was an abrocora

Sept. 14 Tarata,

Sept. 15 Tarata, Zonotrichia capensis sings occasionally, but in a
half-hour walk in the "suburbs" you may only hear them once
or twice. Only evidence of breeding birds I have seen so far
was a dove nest with parent + 2 eggs near the river north of

gubosa. Carol probably saw nesting Oreotrochilus at 13 km NE Tarata Sept. 12.

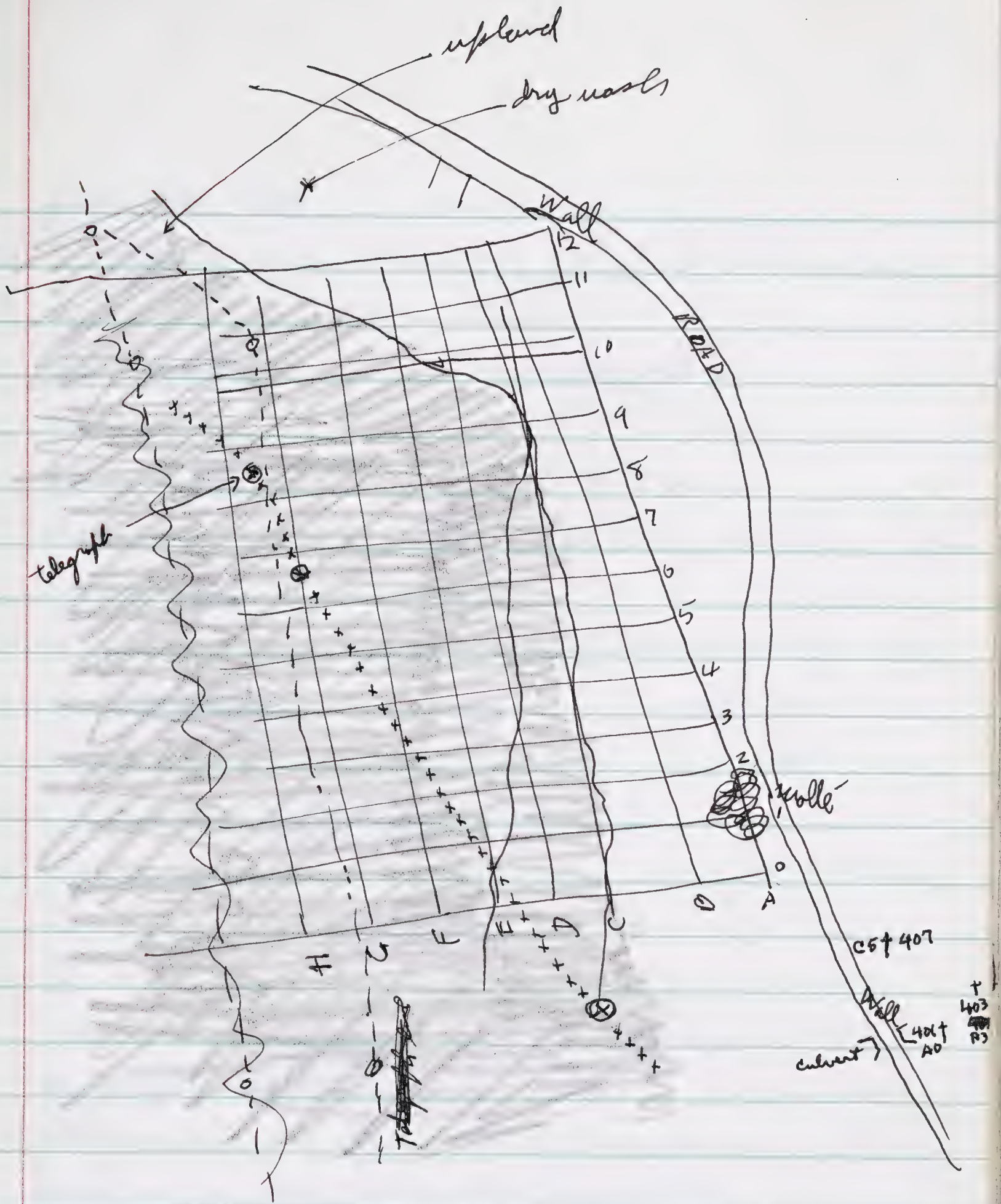
Sept. 16 Walked up hill east of town. above irrigation, the bushes are fairly thick, almost as "lush" as at the aseguia camp at 11,500 ft. Very dry and, in the absence of aseguia, hardly any birds. Caught a "fat" striped Liolanthe and saw several others. minimum temp. under shelter in our patio was 38° ; light frost on green alfalfa leaves in fields.

Sept. 17 Left 9 a.m. for desert camp on Taena road. Had expected to camp amidst the big hydra cacti but when we got there we were discouraged by scarcity of other vegetation, so moved back up the hill to where the yellow flowered Cereus? is dominant (although a few hydra cacti are visible on the slope to the west (and above) us. Laid out a trapping grid but was caught by darkness before I could get more than about half the traps out. Saw a large lizard, parakeets, 2 or more spp. hummers (including patagona), doves, a yellow-bellied finch, and a small furnarius may have heard barn owl.

Sept 18 Night clear, calm, min 41° . Grid has 15 water spacing. Ear-tags and released Lh. darwini as follows at 7 a.m.:

A0 ♀ #401+402 vagina not open	B0 ♂ 406 half-grown
A3 ♀ 403 adult " " "	C5 ± ♂ 407 old
A6 ♂ 404 "	D4 ♂ 408+409 ad.
A9 ♀ 405 " " " "	F5 ♂ 410 ad.
C3 ♂ rt. ear notched PM adult	E2 ♂ RP5 cut half-grown
E0 ? left ear " " "	

Three of these were discovered in the traps in PM (on good slope);



may have missed them on AM run. Estimate that I had 25 of the 31 dry-wash stations covered, and maybe 20 of the ~~sp~~ hillside stations = total 45 traps. Finished staking grid in AM and set traps at all stations except those that caught traps since last night.

Family caught a Ctenoblepharis out in open (away from area); this is surely the genus we saw on the area, saw one more in the dry wash below the area.

a Tarateño refers to the brush-covered hillside as chari; I

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Ref gather lilacs "bush"

Sept. 19 night clear & calm, min 42° , Ran traps at 6:30 on grid:
caught 3 new ones and 3 recaptures:

All ♂ ygish #411

recapt at D9 ♂ ~~404~~

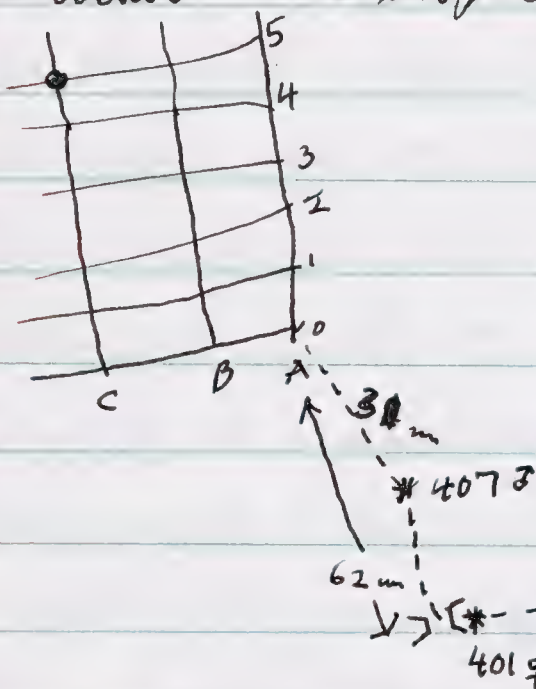
B10 ♀ ad closed 413

" at A10 ♀ 405

F8 ♂ yg ad. 414

" " B2 ♂ juv 406

In addition Anita snap-trapped 3 tagged ones off the area as follows



distance travelled 401 ♀ = 62 m

403 ♀ = 132 m

407 ♂ = 111 m

409 = 60 + 60 = 120 m.

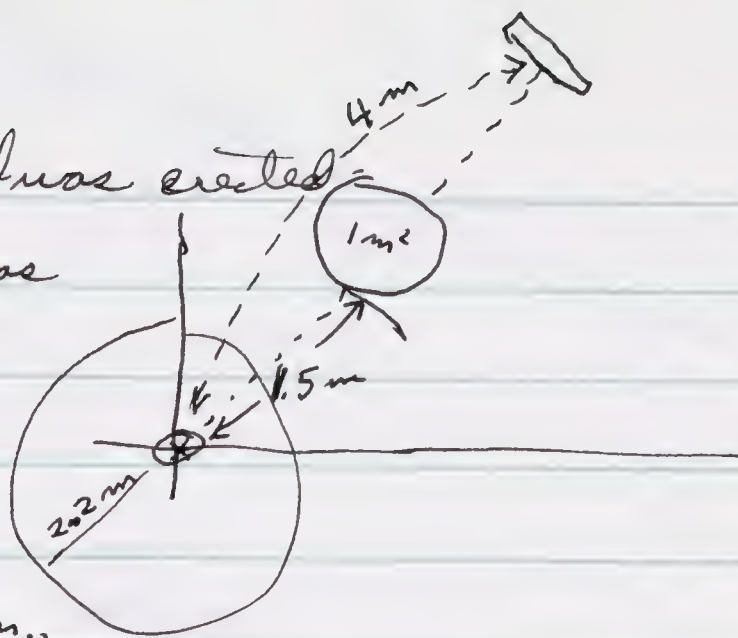
Anita had 63 snap traps out and caught 12 Ph., Larini, and 2 tails.
my 7 traps including two jumps at 2 inches in cliff high above
study area caught 2 Phyllotis. One of these was tagged at D4
#409 ad ♂. Released him at D4. Released tagged tailless at Culbert.

One trap with a mouse in it in the dry wash had been pestered
by a fox. Three sets of fox droppings contained respectively Phyllotis,
viscous fur (or abrosum?), and pure molar berries barely digested.

Spent the day quantifying plants. Used every other stake
of the grid as a reference point (=45 samples). To
avoid trampled soil around the stakes (held up by
rock cairns) we measured diagonally 1.5 m and dropped
the 1 m² hoop with its ^{nearest} periphery 1.5 m. from the stake.

On the same diagonal a board was erected 4 m from the stake. The board was divided into 3 "altitudes":

$\frac{1}{2}$ m, 1 m, and 1.8 m. Sighting at the board from the stake at respectively $\frac{1}{4}$ m eye level, $\frac{3}{4}$ m,

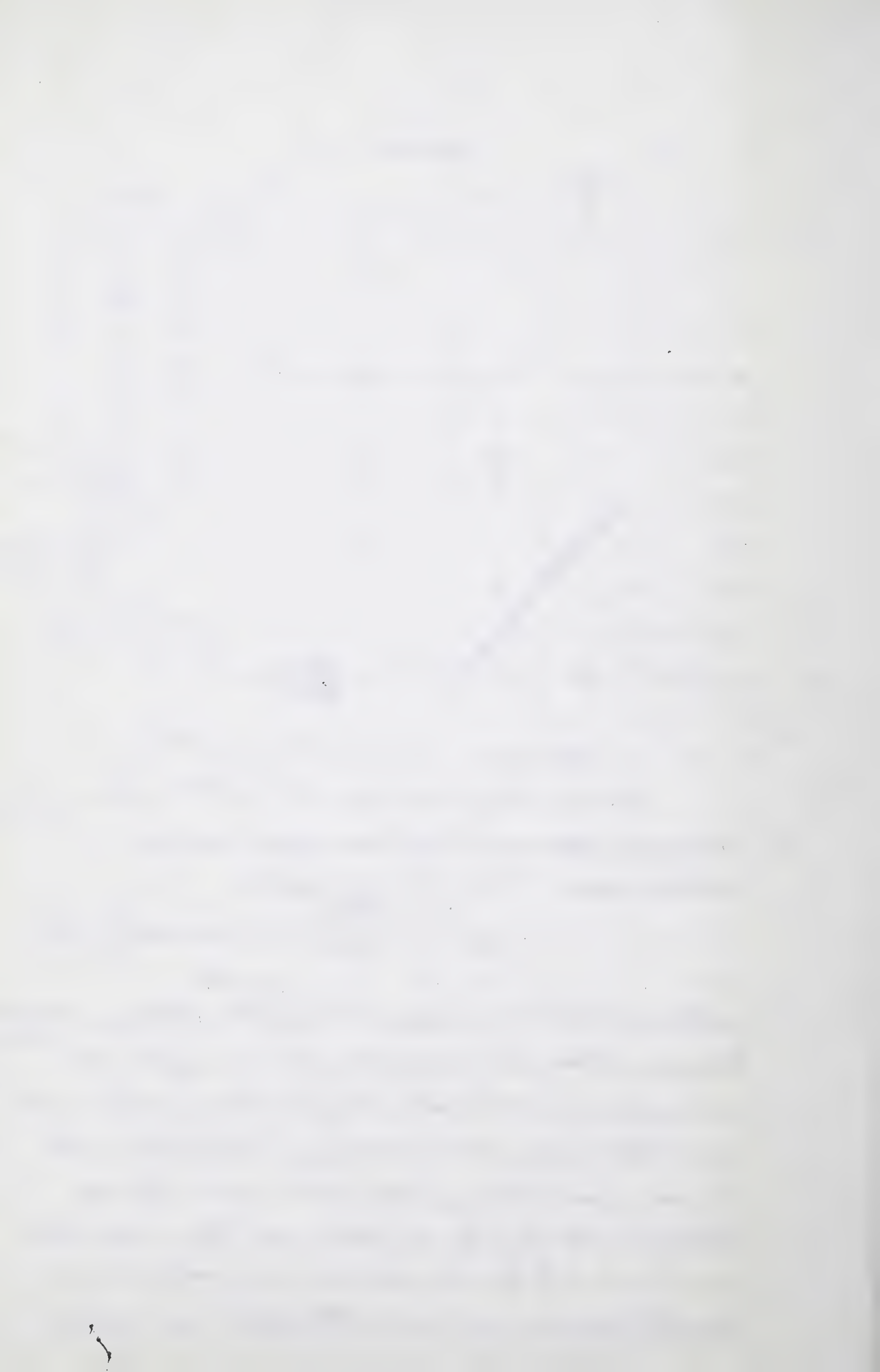


and $1\frac{1}{2}$ m, the percent of each board section obscured by vegetation was estimated. Within the hoop the % of ground covered by vegetation was estimated, broken down into the dominant three species plus a total coverage. Finally, the number of hidey holes within 2.2 m of the stake were counted. a hidey hole is a dark safe retreat where a mouse could not be reached by people or poles.

Jacklighting saw a bat hunting at 8:15, temp 48°. Flew & looked about like antrozous. Carol thought she heard one last night. No hawks or owls yet.

Just before "sunset" saw a small brown unstriped lizard a few feet off of the study area. Maybe Lissemus alticola but no stripes visible; In dead brush pile.

Sept. 20 Night calm & clear. minimum . It had hosed out. Wind blows up the valley in daytime, down at night. Anita had about 68 snap traps out and caught 1 marmosa, 1 Bolomys berlepschi, and 11 Phyllotis. Yesterday surely a mouse, today maybe 1, and a juvenile with small ears. The marmosa was in a particularly brushy part of the dry wash, about a half km. below the study area a shallow ditch has been dug and contains 10 or 20 gallons of water.



The study area at 10 kms Tarata, 10,000 ft., is about as low as seems profitable to study; any lower is too barren. It consists of two habitats: dry wash (31 stations) and upland (65 stations). The rocky river bottom contained tobacco, broad-leaved shrub, some other bushes, a few cacti, and a few scattered plants such as tomato, One patch of molle (no fruits). The upland was columnar cactus (yellow flowered), crumple-leaved bush, beckeria-leaved thorn scrub, and a few other bushes, plus lesser herbs such as capsulated annuals, break-off weed, the reddish succulent from the Tillandsia desert, dwarf Tillandsia, and, especially on the upper slope, a few tufts of grass, also spherical joint cactus (orange flowers), ~~but not~~. Two departures from "natural" are a stone retaining wall below the road near one corner of the grid, and the presence of a distinct network of grazing tracks on the hillside, another complication is the water hole a half-kilometer downstream. The location is at about km 62 from Tacna. The tobacco, broad-leaved shrub, and tomato look vigorous, but the cacti, in spite of bloom, look in sad shape and the crumple-leaved plant practically dead (except in a few spots where it may have received water). The red-flowered mistletoe looked healthy.

Returned to Tarata in PM.

Sept. 21

Tarata

Sept 22

Tarata. Lots of hummer activity around the big red-flowered bush at the big rocks south of town at dusk. 3 spp. Too many bibitzers to set traps.

Sept. 23 Tarata,
Fri

Sept. 24 Left Tarata 8:15 for aseguia camp (2 mi. N Tarata, 11,500 ft), and spent the day setting up a 6 x 15 row grid with 15-meter spacing. It includes quite a bit of aseguia and some long-abandoned terraces, but only about 30 meters of good mouse wall on the study area. Several Ziataenys alticola seen around camp and a few on the area, most of the area is on top of the ridge (here about 400 m wide), but rows E and F are on the steep north-west facing slope. Evening calm, clear, no wind, moon 3 or 4 days old.

Sat.
Sept. 25 Minimum 31° F. Breeze came up during night, blowing down canyon from the east. Ran traps at 6 a.m.: 13 mice (including a magister that escaped without tagging at 11).

One set of fox? droppings contained bird feathers, mouse hair, grass, a few large fragments of bone, cactus? skin.

Saw only 1 lizard all day, a ^{small} L. alticola, at 5 set under the cliffs up the aseguia a half mile and watched a core to see if lizards entered; 6 or 8 flew up canyon and kept right going. many other birds also flew up canyon at dusk.

Put about ¹⁰ ~~12~~ large Sherman south of camp to pick up home ranges of tagged individuals or live and downings. Anita put 38 MS and 4 Sherman up the aseguia in green grassy and then rocky.

Drove up the hill in afternoon to get food for Coptocercus. First Polydora at 12,000 ft., first appreciable Lepidophyllum quadrangulatum at a pampa at 12,600 ft.

Sept. 26 Clear + calm until about 5 a.m., then breeze. minimum 27°. at 1 PM 65°, 5" under flat ground 20°C. Anita caught P. magister, P. darwini, Abodon boliviensis

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Acquila

		NE 2 mi. n. Tarets, 11,500 ft	Sept 25 Sat.	26	27	28
417	♀ ad.	^{no} Anduonys vag not open Left ear also perforated. <u>magister</u>	A3			A1 left
419	♂ ad	<u>ph. darwini</u> foot 25½	A8		A8	
420	♂ ad.	<u>magister</u> foot 31	A9	29m S A10	A11	A10
421	♂ ygish	<u>darwini</u>	A12			
—	? ad.	<u>magister</u> (escaped)	C1			
423	♂ huge	<u>magister</u> foot 30	C6		E3	D5 ^{left}
424	♂ ad	<u>darwini</u> foot 25	D4	C4	D9	B5
425	♀ ad	<u>darwini</u> not open foot 24	E4	D5	C6	
426	♂ big	<u>magister</u> foot 30	E14		D15	
427	♀ ad	<u>darwini</u> not open ^{foot 25}	E15		E12	C9 69
428	♀ ad	<u>magister</u> not open ^{foot 30}	F13		E13	F13
429, 430	♀ left ear half gone	^{foot 23} & half grand <u>darwini</u> not open	F5	C11	D12	C11
431	♂ ad	magister ^{foot 26+23} - <u>darwini</u> 9/26	F4	B4	F4	D2
432	♀ ad	<u>darwini</u>	A14	A14		
433	♂ "	" foot 24	B15	B15		C14
434	♀ "	<u>magister</u> vag. not open foot 30		B12	A15	B14
435	♂ "	" foot 24		C15		D6
436	♂ "	<u>darwini</u> foot 26		D3	E4	
437	♂ half-grown	" foot 25		D1		D3
440	♀ ad	" foot 25 (vag not open)		F7	F8	F7
[444]	♂ ad	<u>darwini</u> tagged 100m S A10] foot 25			A14	A14
445	♂ ad	<u>Bolonyx berlebachii</u> (between 6:30+8 am)		C9		
446	♂ ad	" " during day		C3		
447	♀ ad	" " " " vagus closed		F2		F1
448	♂ ygish	<u>ph. magister</u> 28 foot	*	A3		
449	♂ ad	<u>magister</u> foot 30		F15		E15
450	♂ yg ad	<u>magister</u> foot 27 x 22		F11		



Acquia Camp

Comparison of darwini and magister sites

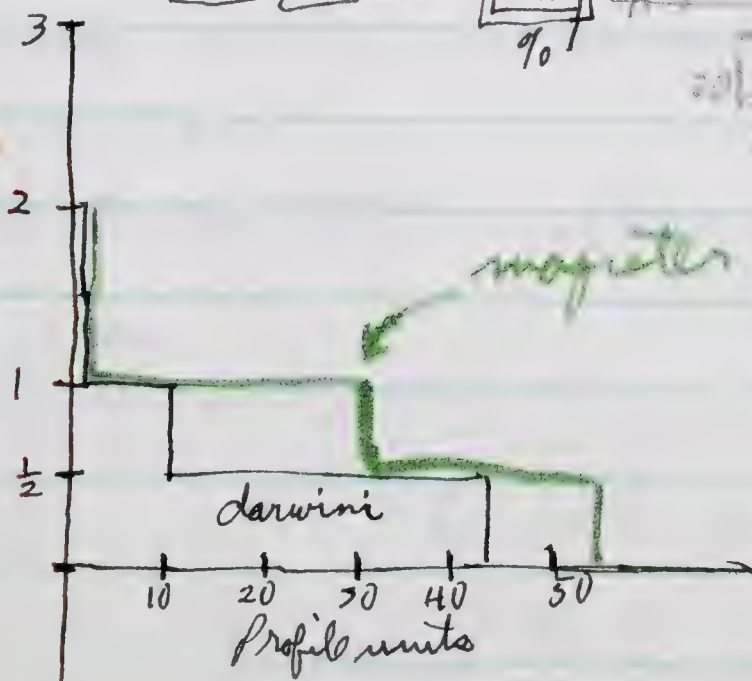
Parwini	hideholes	Profile				hoof cover
		$\frac{1}{2}$	$\frac{2}{2}$	2	3	
A8	2					
A12	0					
D4	2	70	0	5		50
C4	5					
D9	3					
B5	0					
E4	4					
D5	8					
C6	0					
E15	2	30	40	0		15
E12	0					
C9	5	15	0	0		4
F5	4					
C11	0	50	3	0		50
D12	1	50	1	0		47
F4	3	90	5	0		65
B4	3	15	0	0		25
D2	0	45	0	0		32
A14	2					
B15	2					
C14	4					
D3	4					
D1						
F7	1					
F8	3					

magister		Profile				hoof cover
		$\frac{1}{2}$	$\frac{2}{2}$	2	3	
A9	4	70	0	0		38
A10	3					
A11	4	15	3	0		17
C1	1	15	5	0		16
C6	0					
E3	7	70	2	0		53
D5	8					
E14	3					
D15						
F13	3					
E13	5	35	25	0		27
B12	0	95	10	0		32
A15	3	25	0	0		13
B14	3	90	60	2		35
C15	0	100	85	10+5		50
D6	0	35	45	0		10
A3	0	95	95	30		3
F15	4					
E15	2	30	40	0		15
F11	3					

19	53	12	67.5	37.0	15+5	30.9
	2.79		56.2	30.8	1.7	25.7%

	25	40	0	45
9	390	89	9.5	333
	43.3	9.9	0.6	37.0
				90

24	58
	2.42



add A1 and A3

A1	5	95	90	10	30
A3	0	95	95	30	3

20	58	13	59.23	35.78	4.23	26.08
	2.76					



Sept-28

(cont.)

no number Abodon boliviensis (dead)

A7

new untagged Ad Ph. darwini foot 27

C4

Darwini home ranges based on 31 captures of 7♂♂ and 4♀♀: 8, 77, 42, 95, 110, 60, 21, 21, 30, 15, 115 average 54 m. Study area (1.57 ha) plus border strip of 54 m = darwini study area of 5.82 ha. Simons index: 13 tagged + available, 4th night caught 9, 8 of which were tagged ones = $\frac{14.6}{14.6} = 2.51$ per ha

magister home ranges based on 19 captures of 7 individuals (5♂♂ and 3♀♀): 30, 54, 21, 15, 47, 138, 15 = average 46 m. Study area (1.57 ha) plus border strip of 46 m = magister study area of 5.04 ha. Simons index 10 available for recapture, caught 6⁷ ∴ population of 9 = 1.79 per ha 2.06/60- all tagged

Bolomys tereticauchen: 3 caught on area. Call it $\frac{3}{3.65}$ per 1.57 ha.

Andinomys: 1 caught. With border strip of 30 m = $\frac{1}{3.65}$ per 1.57 ha

Abodon boliviensis: 1 caught along aqueduct. $\frac{1}{1.57}$ per 1.57 ha.

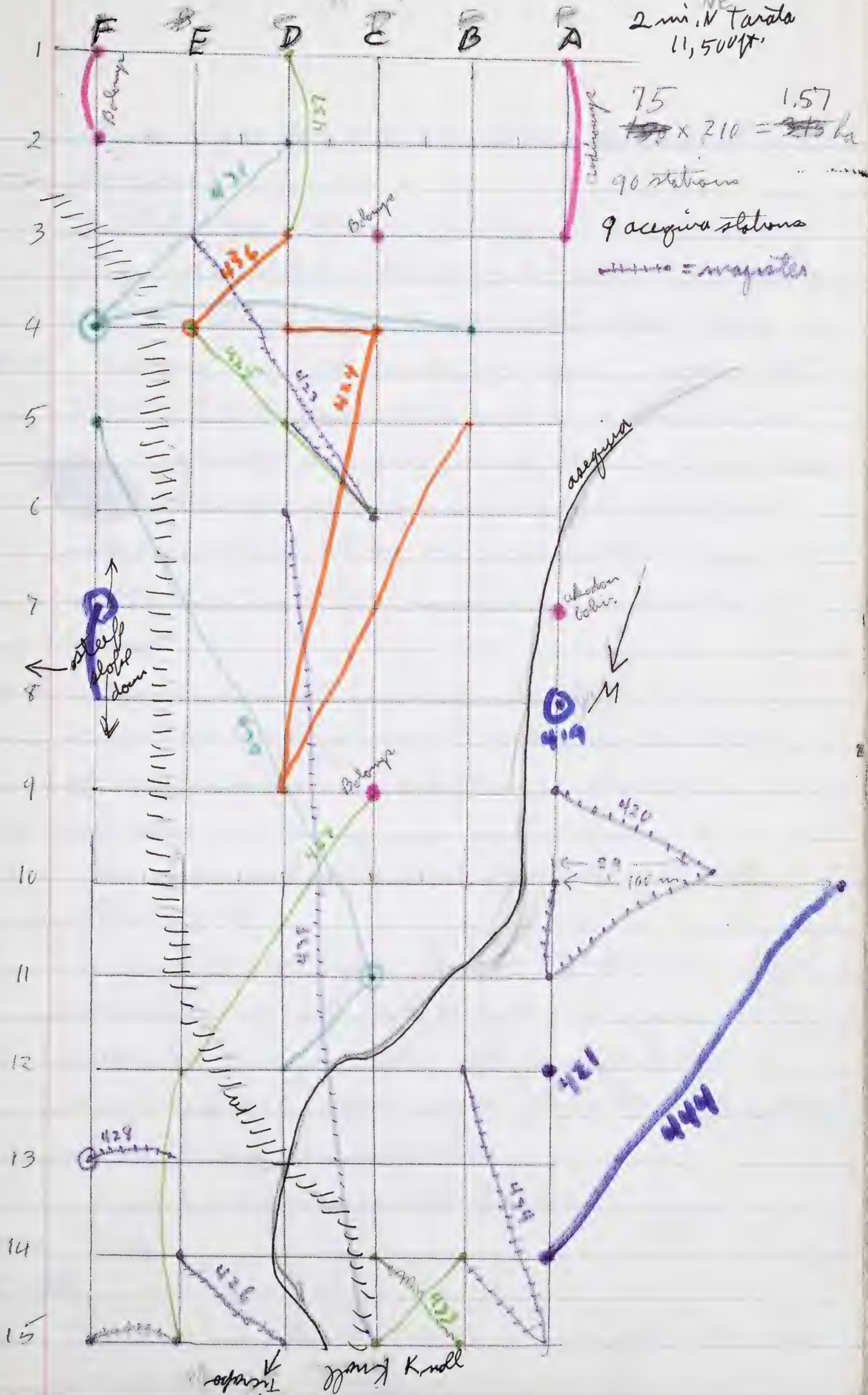
also seen nearby: small bat, 3 lizards on area, probable toad, probable fox, skunk, cat, frog

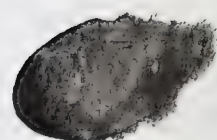
no. of hideholes at stakes without mice: 1, 0, 0, 0, 1, 2, 3, 2, 2, 2, 0, 0, 2, 0, 0, 2, 0, 0, 3 = $\frac{20}{20} = 1.00$

no. of hideholes ^{at stakes} with mice: 5, 0, 5, 4, 4, 3, 3, 0, 3, 1, 1, 5, 0, 0, 1, 0, 2, 0, 7, 5, 2, 3, 3, 0, 2, 3, 0, 2, 2, 0, 5, 0
A8 A10 A12 A14 B15 B5 C4 C6
4, 3, 8, 4, 4, 0, 3, 4, 3, 3
C14 D9 D5 D3 E4 E12 E14 F15 F13 F11
F7, F5, F1 = $\frac{112}{45} = 2.49$

Knoll

ACEQUIA CAMP
2 mi. N Tarata
11,500 ft.





(all in green grass along asequina), and Bolomys berlepschii (all in dry stoney places).

Did plant analysis on study area. I feel it does not represent enough big Cereus, broad-leaved shrub, and Baccharis. Saw another lizard on the area (= total of 2). Kids report frogs in the reservoir a half mile down asequina.

Sept. 27 Night clear, breeze just before dawn; minimum 26° . 5" underground at 8:30 a.m. 13° . Walked down to reservoir maybe 500 yds below camp. Toad 4837 under rock about 20 ft. from reservoir; also a nest in a 2" deep sunny place with a rope of eggs about pencil diam. and at least a meter long; yolk black. Also saw about 5 frogs in water at edge of reservoir, caught one (4838). Carol saw a small bat over reservoir at dusk but not caught.

Sept. 28 Min. 24° , quite blustery 3 to 6 a.m. Moon half full. An old pickup pit-dog skull on area has measurements: incisors - basipharyngeal notch 170, zygo breadth 103, width ^{of rostrum} across PM 36; 3 PM and 3 M, length of tooth row 1' to M 100. Slight crest.

Ice on asequina seep and in splash zones. Also ice on splash just a little above Tarata.

How to tell Ph. magister from Ph. darwini: magister has a longer broader foot (grosser foot) usually 26 or more; tail is more distinctly bicolor; belly fur is greyer, not as white; usually pectoral streak; ear smaller; dorsal fur browner coarser. They are both strictly nocturnal and behave the same when being handled.

Lizard along asequina on grid, but not captured.

Sept 29 Tarata

Sept 30 "

Oct. 1 Ice on basin in patio. Left at 8 a.m. for Yareta camp, arrived 10. Tarata 966 miles, Benav's Pampa 979, Km 110 981, highest

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15-meter spacing

queñua 14,000 ft. Laid out a 13×7 grid, in yareta, Lepidophyllum quadrangulace, stinky Senecio (2 spp), and cushion cactus. Saw 2 Liolaemus on the grid (E11 ± and lower). In a half-hour walk saw about 6 other lizards ^(all multiformis). 3:15 shade temp. 7° , under rocks such as where lively lizards lurked $14^{\circ}, 20^{\circ}, 21^{\circ}$. 5 inches deep in gravelly soil in sun $11 \frac{1}{2}^{\circ}$. at 6:45 a.m. before sun, air -5° , same gravelly soil $+3^{\circ}$.

Oct. 2 Night clear, calm, moon almost full. min 15° F. Grid at 6:30 am had 3 Akodon andinus and 3 Ph. darwini (1 dead), another Akodon (dead) before noon. Anita with 20 snap traps caught 2 Ph. darwini. also 2 dead darwini in big Sherman overlooked by me when we were here before. Put 6 big Shermans in a caverly place at base of cliff with lots of droppings. Saw no lizards on area when running my traps at 1 pm. The moisture at the edge of camp had a short day (see Anita's notes) and small range (± 20 ft.).

Oct. 3 Night clear, calm, full moon. min 6° F; at 7:15 a.m. before sun 18° F. On grid caught 5 Ph. darwini and 1 Akodon. Anita, with 29 live traps around camp site. caught 1 tagged Ph. darwini and 1 tagged Akodon andinus. ~~Cage~~ Kept the andinus in a cage briefly: very wild. gave him choice of yareta seeds, Lepidophyllum, and both species of Senecio. He picked up a few yareta seeds & nibbled them.

Felis concolor

a pair? of peregines hangs out on a cliff about 300 yds. east of the study plot. They have been eating tinamous, hummingbirds, other birds, lizards, and a hystriomorph lower yareta too small for viscacha and not Ctenomys. Later at seed snipe Oct. 4.

at 9 a.m. with shade temp. 4° we saw a Liolaemus alticola in yareta - Lepidophyllum at the edge of camp, 6 ft from where we

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were watching L. multifurcata yesterday, too lucky to capture.
Saw lizard at C10 at 11:15, probably alticola because in thick Sesuvium near
traps with abourea andina. D12 at 3 pm and C11 at 4 pm

Put 2 captive baby Siolaemus multi ^{#4852, 4853, 4854} and a captive L. alticola in
shade in plastic bag at 5 pm. at 5:20 with air at 4° (lizards
presumably equilibrated), both spp were totally unresponsive -
acetated and could neither right nor walk.

Frogs & toads: 3 small individuals put into screen cage at 12:20
in shade and breeze:

	12:32	12:50	1:05	1:15	
Frog "spot" #4855	6°	1 1/2°	2 1/2°		<u>Pleurodema macrinata</u>
Toad "stripe" #4856	9°	3°	2 1/2°	3°	<u>Pleurodema macrinata</u>
Toad pale spots #4854	6°	3 1/2°	2 1/2°	1 1/2°	<u>Pleurodema macrinata</u>
air	10°	9°	10°	9 1/2°	

synthetic frog [= plastic bag with water, covered with wet henley] 0°

Wet-dry bulb 50° - 30°. Wet-rag Schultze's in breeze 0° at 1:10
all 3 spp able to walk and right at 3° and 2 1/2° body temp (oral)

Rehydrated them at warm tank then put on screen wire
in sun at 1:40:

	1:52	2:00	
Frog "spot"	5°	6°	<u>Pleurodema</u>
Toad "stripe"	6°	5°	"
Toad pale spots	4 1/2	5 1/2	"

all 3 amphibians small, about same size.

Mom & kids went ⁶⁰⁰ 500 yds down road to seeps at 10 am
and set ^{#12} 8 Shermans for Ph. boliviensis. Ali picked up
a rock 15' from ^{gassy} seeps and under it were the above
3 amphibians, 1 big Siolaemus multifurcata, and 5 to 7 very
small L. multifurcata. By 3 pm the 11 traps had caught

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Varista Camp

		<u>Oct. 2</u>	<u>Oct. 3</u>	<u>Oct 4</u>	<u>Oct. 5</u>
451 ♂ ad	<u>Ph. darwini</u>	A1	Hummer Rock 148m		
452 ♂ ad	<u>abodon andinus</u>	A8			
453, 454 ♀	" "	B1	mon 63m		B1
455 ♀ vag. open	<u>Ph. darwini</u>	D11	D8	E8	E9
456 ♀ juv.	<u>abodon andinus</u>	D10	B11 and C10†		
— ♂ ad.	<u>Ph. darwini</u> (dead)	G8			
— ♀ ad.	<u>abodon andinus</u> (dead)	C10			
457 ♂ ad	<u>Ph. darwini</u>		F13 and E8	E13	
458 ♂ juv.	" "		B7	E6† dead	
459 ♂ ad	" "		G8		Hummer cave 100m
460 ♂ juv.	" "		G11	G12	G11 down road 160m
461 ♀ ad	" " not open		A1	A1	about hummer cave 130m
462 ♂ ad	" "			A13	
463 ♀ ad	" " not open			C1	
464 ♀ yg ad	" " vag. open			F9	

abodon andinus home range 50m, population of 4, ^{0.75} 1.2 per ha.
Ph. darwini " " 103m, " " 12, 2.2 " "
Vireoscha - present but densities not calculable.

fox + skunk + human

7 sightings of Loboceros alticola = 4.3 per ha.

On Nov. 15 Anita caught ♀ 455 north the hummer cave, #461 in the V below the road, #451 with lobbed tail above the road.

Hole at mouse sites: A8-2, B1-2, B7-0, B11-2, C10-4, D11-2

E6-0, E8-0, F9-2, F13-3, G8-1, G12-2 see more

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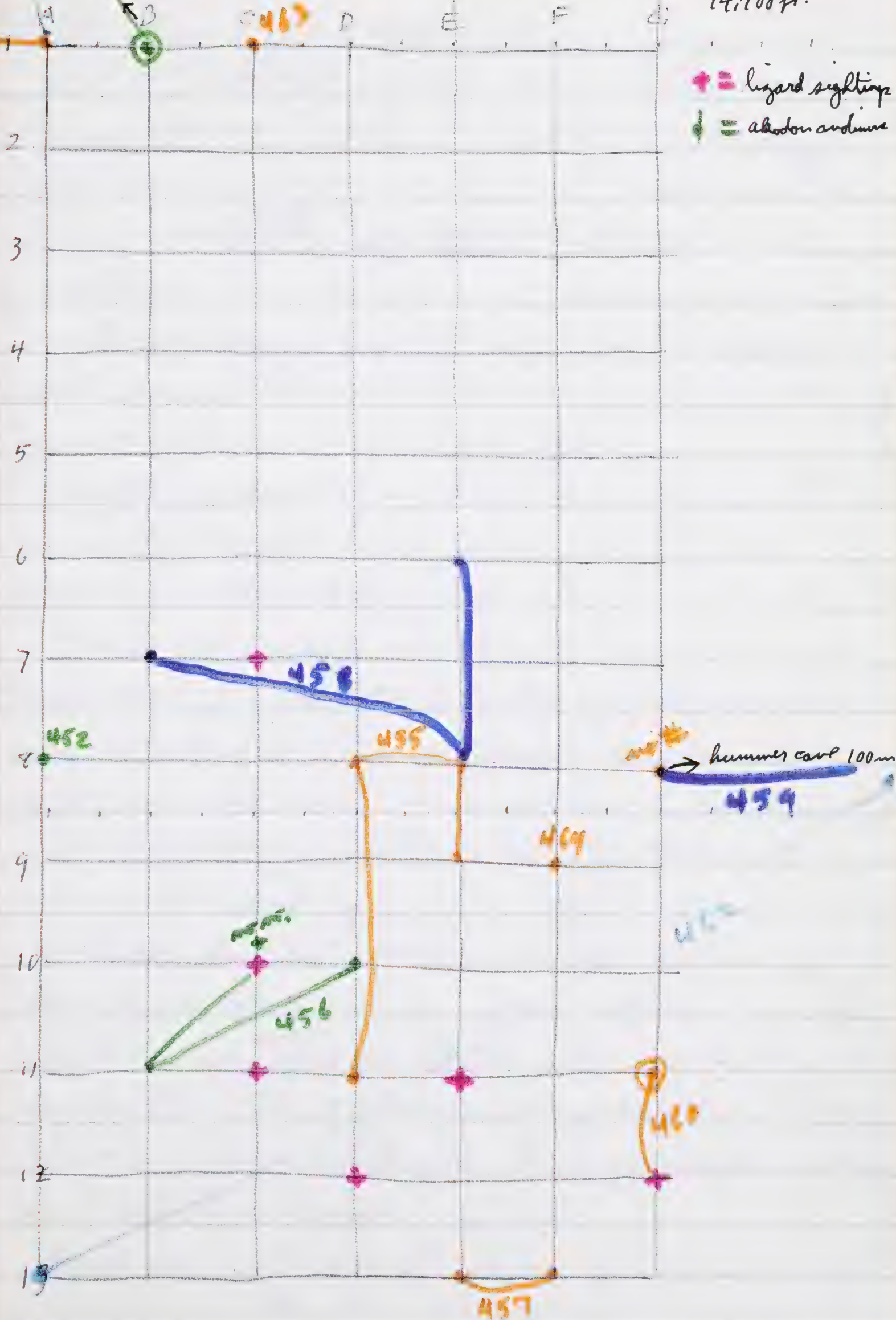
160 m

camp
148 m
451

grid 90 x 180 m
= 1.62 ha,

Nyarata Camp
13 km NE Tarata
14,700 ft.

+ = lizard sightings
↓ = akodon auduboni





5 Ph. boliviensis and 1 Cebodon andinus.

In PM did plant census of grid. The leaf samples do not represent fairly the importance of the straight-leaved smelly Senecio nor the crisped leafed smelly Senecio. also ^{may have} ~~probably~~ sighted Nototricho under bushes.

Oct. 4

Full moon, clear, calm, minimum 9°F. Ph. darwini in wire cage in car with yareta seeds and traps of all local plants died. Grist traps caught 8 darwini, while running the traps, saw 4 huenueles up among the crags & cliffs above camp. One was big buck.

Something has excavated around roots of long-leaved smelly Senecio. One looked at had a big orange-red grub in the center of the stem; another had numerous coccids.

First clouds appeared about 11 a.m.; at 12:45 it was grey-overscast to the east. More or less clear later. Put about 11 ms and 8 large Shermans in the cliffs at and above the hummingbird cave. At 2 p.m. cloudy bright, shade temp was 8°, in hummer cave 8°. Flurries of snow. Saw L. alticola at 1:30 at C7 on grid. moved cat sets (2), dead-mouse bait had not been touched in 3 nights.

Oct. 5

Full moon, some light overcast, minimum 21°. Carol saw small dark lizard run into bush at G12. Hummer droppings at hummer cave, which is only ^{100m ±} above grid. The two falcons are Falco fuscus. My traps at base of cliff at & above hummer cave caught Ph. darwini including two tagged ones from the grid. Ants caught & tagged one way down the road. Abrocoma escaped.

Review of mammal fauna: Ph. darwini common nocturnal and runs ranging although none caught out in open gravel slide sets. Cebodon andinus found almost entirely near thick

nests of Sepidophyllum quadrangulare. mostly nocturnal but some activity during the day. ⁴Hummers seen 250 m away and droppings 100 m. Viscacha in small numbers seen 100 m above grid, and their droppings are everywhere on the grid; they probably come down into the open parts at night and feed on cactus seeds, Sepidophyllum etc. In the cliffs are more green plants such as Werneria etc. Down the road $\frac{1}{2}$ mile at the seep, Ph. boliviensis was abundant. It was barking long-leaved sueleyi Serecio; probably needs water. Something was excavating around the roots of l.l. sueleyi Serecio on the grid, probably to get at coccids and or big orange-pink grubs that tunnel in the main stem. These might be skunk, viscachas, or mice. Saw no tracks or evidence of ^{spotted 3 sets droppings see below} caracaras. No evidence of Chinchilla, Chroocorys, or Lunocorys, all of which might be expected.

Lizards: Liolacium alticola was common near Sepido. on the study area; L. multifurcata was seen at camp 130 m from the area, but none seen on the area. No amphibians, no water on the area, but 3 spp. of frogs & toads at a seep a half mile down the road. ^{7 sightings of lizards on the area in 5 days: E11, C10, D12, C11, C7, G12.}

Vegetation: Yareta & Sepidophyllum overabundant, but the two kinds of sueleyi Serecio are common. Underneath them we probably missed some Nototricha which I encountered when digging up Serecios as we left.

Card saw ants, 3 sets of caracaras droppings contained viscacha, birds, shells, small snails, mice, large flat humerus (lizard?), and broad blunt

toe nails of skunk size (see viol) (tinamon?)

Left about 10 for Tarata, all day was cloudy or cloudy-bright, even down in Tarata, and it snowed on the mountains south of Tarata; may have snowed at Yareto camp.

Oct 6 Tarata, some light clouds. Ph. darwini in cage overnight ate cactus seeds (cushion cactus) and fruit, and some twigs of Lepido- phyllum. In afternoon given more Lepido + cactus and Lepido galls, ate cactus seeds avidly, then flesh of fruit. No yareto ^{eaten} seeds. Abdon andinus overnight ate cactus seeds; no evidence of Lepido, Sereno, or yareto seeds. In afternoon ate bread fruit, then cactus seeds.

2 pellets under a cliff near the Yareto study area contained: (1) pure hummingbird feathers + feet (2) pure lizard scales. Also weathered mandible of a rodent and skull fragment and mandible of a small hystricomorph such as abrocoma.

Oct 7 Tarata

Oct 8 " . The captive Abdon andinus and Ph. darwini chilensis don't like Lepidophyllum quadrangulum, but love seeds of cushion cactus, and darwini likes the fleshy part of the fruit also

Sat.

Oct. 9

Left Tarata 8:45 for Tacna Tillo's desert; arrived 11:45. The green crumble-leaf bush ^{Franseria} hake Carr turnoff had been eaten to the ground. Put out corner stakes of a 150x150 grid and set 41 small Sherman and 30 large Sherman around periphery at 15-m spacing and 3 rows. No footprints of mine but lots of small fox and a few big dog. Sables under almost first rock picked up near tent (not on study area). Eve clear, cold, in afternoon steady breeze from ^{south Tacna} ~~south~~ (Tarata).

Heaton
1971

Sun
Oct. 10

5 a.m. foggy, but sun up by 6 and fog disappearing, including a curious almost-colorless rainbow. Hair soaked while running traps and Tillandsia wet on north side but not south. Very light breeze from north (Tarata), minimum temp. 36° . Our desert clear by 6:30, but still overcast & foggy a mile toward Taoro, and Taoro still completely overcast at 8:30 a.m. Curious acoustics at camp: can hear (and a notis could understand) a loudspeaker in Taoro.

Camp is a little ~~far~~ north of the 10 km marker on the Taoro-Tarata road (about $10\frac{1}{2}$ km). No Tillandsia is budding or flowering, no seedlings, but it looks healthy. The ^{rows} lines and crescents extend east-west going toward the south. Have seen none of the little pink-red succulent on the area proper, nor the rusty-Bird's beak, but some grow 100 yds north of the area. There is one 2-foot-high sand "dune" within the area; it has choked and killed numerous Tillandsia, others are trying to keep from being smothered.

Traps untouched except a pot dry under one of them (unsprung). 2 steel traps baited with mouse carcasses untouched. Brief flashlight - quartz crystals & pebbles lighting revealed no geckos or foxes; too much glitter in soil to count spider eyes. Saw small bird and lizard-gecko tracks in the gully west of camp.

at 10 a.m. put about 25 museum specials in this gully. at 5 p.m. a *Tropidurus*? was in one of the traps. Changed the two pot traps.

In a typical part of the grid, I marked off a 15×15 m section and measured and turned over all the Tillandsia. There were 57 mats or rows and I recorded in total under them 16 tiny spiders, 3 medium-small spiders, 1 long-legged minis-



spiders, 1 pseudoscorpion, and 2 small Thysanurans.
Several collections of rather spherical empty beetle shells.
a few snail shells strewn about the general area. no
cicadas or lizards. I think the reptile action is where
the rocks are, and there are none on the study area.
Carol found a *Fishia* - like lizard out in the open about
50 m west of the grid. yesterday's gecko was also about
50 m west. The area of *Tillandsia* examined in the 225
 m^2 was $372,090 \text{ cm}^2$, ^{= 16% coverage}. The largest row was $700 \times 50 \text{ cm}$.
room temps 72° , wet-dry $68^\circ - 59^\circ$.

1 P.M. open flat grid in sun, soil 3" deep 28° , 5" 26° .
under large *Tillandsia* 3" 21° .

The sand dune is moving north leaving a trail of dead and
dying *Tillandsia*.

Oct. 11

Some fog gathered during night but AM was clear. a little dew dripped
off of car. a fox had approached one set cautiously and stolen the bait from
the rear; a fox scented about 3 of the big shiny aluminum skimmers!
also 20 yds from tent. Early morning was overcast in Tacna.

no traps on grid touched. One in the rocky gully had
a mouse tail - was I believe.

a gecko caught by Carol weighed 2 g.

at 6:30 a.m. shade ground temp. 4" deep 18° , 5" deep 17° , 3" deep 15° , 2" - 13°
Under *Tillandsia* 5" deep 16° , 3" deep 16° . Under yucca gecko-like rocks (thick):
 13° , 12° . ^{in sun} Under ~~flat~~ flat rock in sun at 7:45 with gecko 14° .

This location shall be known as 4 miles north Tacna, 3360 ft.

The sterility of the study area proper with all its *Tillandsia*
^{contrasted} ~~compared~~ to rocks and gully nearby is ^{due to} presence of rocks. The

am = ~ 06:00
noon = ~ 12:00
pm = ~ 18:00

Tarata

15 Sept	Min	Max	R.H. am	R.H. noon	R.H. pm.
15 Sept	40°F	76	49-36	76-51	54-42
16	38	74	42-33	71-49	52-40
17	40		58-40		
18					
19					
20					52-40
21	78 ↔ 44	44	43-34	—	51-40
22	80 ↔ 45	45	43-34	73-49	55-41
23	44	82	^{07:00} 50-37	72-48	55-42
24	44		44-32		
25					
26					
27					
28			42-42	72-42	
29	36	72	42-29	70-44	52-36
30	37	74	40-28	68-43	
Oct 1	36		37-28		
2					
3					
4					
5		63		60-42	50-39
6	35	68	^{07:00} 43-34	66-47	52-36
7	36	63		73-48	^{20:00} 51-40
8	37	74*	40-32	71-46	
9	38		40-32		
10					

1. Zoned to 100 ft.

Cloudy snow on mt.

* I discover sun hits thermom.
mid afternoon

Name		Address		City	
John	Smith	123	4th	St.	NY
James	Johnson	456	7th	Ave.	LA
Robert	Brown	789	1st	Blvd.	CH
William	Wilson	101	2nd	St.	PH
Richard	White	202	3rd	Ave.	SI
Thomas	Green	303	4th	Blvd.	BR
Charles	Black	404	5th	St.	MT
Henry	Gray	505	6th	Ave.	IN
Samuel	Red	606	7th	Blvd.	IL
Joseph	Blue	707	8th	St.	OH
Benjamin	Yellow	808	9th	Ave.	PA
Samuel	Pink	909	10th	Blvd.	MD
David	Orange	1010	11th	St.	VA
John	Green	1111	12th	Ave.	NC
James	Blue	1212	13th	Blvd.	SC
Robert	Yellow	1313	14th	St.	GA
William	Pink	1414	15th	Ave.	FL
Richard	Orange	1515	16th	Blvd.	AL
Thomas	Green	1616	17th	St.	MS
Charles	Blue	1717	18th	Ave.	LA
Henry	Yellow	1818	19th	Blvd.	TX
Samuel	Pink	1919	20th	St.	OK
Joseph	Orange	2020	21st	Ave.	KS
Benjamin	Green	2121	22nd	Blvd.	NE
David	Blue	2222	23rd	St.	WY
John	Yellow	2323	24th	Ave.	CO
James	Pink	2424	25th	Blvd.	UT
Robert	Orange	2525	26th	St.	NV
William	Green	2626	27th	Ave.	CA
Richard	Blue	2727	28th	Blvd.	AZ
Thomas	Yellow	2828	29th	St.	NM
Charles	Pink	2929	30th	Ave.	OK
Henry	Orange	3030	31st	Blvd.	KS
Samuel	Green	3131	32nd	St.	NE
Joseph	Blue	3232	33rd	Ave.	WY
Benjamin	Yellow	3333	34th	Blvd.	CO
David	Pink	3434	35th	St.	UT
John	Orange	3535	36th	Ave.	NV
James	Green	3636	37th	Blvd.	CA
Robert	Blue	3737	38th	St.	AZ
William	Yellow	3838	39th	Ave.	NM
Richard	Pink	3939	40th	Blvd.	OK
Thomas	Orange	4040	41st	St.	KS
Charles	Green	4141	42nd	Ave.	NE
Henry	Blue	4242	43rd	Blvd.	WY
Samuel	Yellow	4343	44th	St.	CO
Joseph	Pink	4444	45th	Ave.	UT
Benjamin	Orange	4545	46th	Blvd.	NV
David	Green	4646	47th	St.	CA
John	Blue	4747	48th	Ave.	AZ
James	Yellow	4848	49th	Blvd.	NM
Robert	Pink	4949	50th	St.	OK
William	Orange	5050	51st	Ave.	KS
Richard	Green	5151	52nd	Blvd.	NE
Thomas	Blue	5252	53rd	St.	WY
Charles	Yellow	5353	54th	Ave.	CO
Henry	Pink	5454	55th	Blvd.	UT
Samuel	Orange	5555	56th	St.	NV
Joseph	Green	5656	57th	Ave.	CA
Benjamin	Blue	5757	58th	Blvd.	AZ
David	Yellow	5858	59th	St.	NM
John	Pink	5959	60th	Ave.	OK
James	Orange	6060	61st	Blvd.	KS
Robert	Green	6161	62nd	St.	NE
William	Blue	6262	63rd	Ave.	WY
Richard	Yellow	6363	64th	Blvd.	CO
Thomas	Pink	6464	65th	St.	UT
Charles	Orange	6565	66th	Ave.	NV
Henry	Green	6666	67th	Blvd.	CA
Samuel	Blue	6767	68th	St.	AZ
Joseph	Yellow	6868	69th	Ave.	NM
Benjamin	Pink	6969	70th	Blvd.	OK
David	Orange	7070	71st	St.	KS
John	Green	7171	72nd	Ave.	NE
James	Blue	7272	73rd	Blvd.	WY
Robert	Yellow	7373	74th	St.	CO
William	Pink	7474	75th	Ave.	UT
Richard	Orange	7575	76th	Blvd.	NV
Thomas	Green	7676	77th	St.	CA
Charles	Blue	7777	78th	Ave.	AZ
Henry	Yellow	7878	79th	Blvd.	NM
Samuel	Pink	7979	80th	St.	OK
Joseph	Orange	8080	81st	Ave.	KS
Benjamin	Green	8181	82nd	Blvd.	NE
David	Blue	8282	83rd	St.	WY
John	Yellow	8383	84th	Ave.	CO
James	Pink	8484	85th	Blvd.	UT
Robert	Orange	8585	86th	St.	NV
William	Green	8686	87th	Ave.	CA
Richard	Blue	8787	88th	Blvd.	AZ
Thomas	Yellow	8888	89th	St.	NM
Charles	Pink	8989	90th	Ave.	OK
Henry	Orange	9090	91st	Blvd.	KS
Samuel	Green	9191	92nd	St.	NE
Joseph	Blue	9292	93rd	Ave.	WY
Benjamin	Yellow	9393	94th	Blvd.	CO
David	Pink	9494	95th	St.	UT
John	Orange	9595	96th	Ave.	NV
James	Green	9696	97th	Blvd.	CA
Robert	Blue	9797	98th	St.	AZ
William	Yellow	9898	99th	Ave.	NM
Richard	Pink	9999	100th	Blvd.	OK

3 species of reptiles couldn't care less about the Tellardia.
Spiders dominant. See Nov. 5 for sect analysis

Off to Tacna at 8:30 to meet Benson. Plans lots, all day
in Tacna. Zonotrichia singing everywhere; Erythraea also common.

Oct. 12 Tarata. Sunny and warm.

Oct. 13 Left about 9:30 for higher with Carol & Benson. Camped
at our same place at 6 km NE Tarata, 12,400 ft (Quercus large).
measured out a grid in good bushy Quercus - hirsuta habitat.
grid 11 stations x 9, set at 4-6 pm with large & small shermans.
Sunny and warm.

Oct. 14 min 26°; clear. Ran traps at 6 a.m. on grid: 4 Peromyscus and 2 Bolomys
berlandieri, then again at 9 = 6 more Bolomys one of which escaped
untagged. Scorpion under a rock. No mice caught in clumps of
pure Quercus, but a Bolomys was seen twice at the edge of a
pure clump next to the tent about 8 a.m. Abrocoma tracks at a
hole down near the turn of the road. also viscacha prints, foot prints,
and probably skunk. Carol saw a viscacha, about 150 yds from
the grid, but I have not seen any droppings on the grid. The only
bird seen has been my old friend Lophortyx multifasciatus under
the sand stone out on the plain.

Did plant inventory with Carol in afternoon; 4 rows = 22
stations. Hoop basin hit any coctus yet.

Jacklighting at 8 flushed Lophortyx but nothing else.

Oct. 15 night clear calm. 2 Phyllotis in the seven traps set for
Abrocoma (two of the places with Abrocoma footprints and one with
" droppings. Ran traps at 5:45: 6 Phyllotis, 3 Bolomys & at

Aeneas study grid.

6 a.m.	Oct. 14	15	16	17
465 ♂ ad <u>pale darwini</u> , pale tail, big feet	B10	A11		
468 ♀ " " " long tail, big feet.	D6	G11	G7	
469 ♂ yg ad " " pale tail, big feet.	F11	E8	H1	
470 ♀ ad <u>Bolomys berlandieri</u>	F9	G10	I8, G8	
472 ♀ juv " "	F8	F8	E4	
473 ♀ yg ad <u>pale darwini</u> . ^{smallish ft.} pale tail, short tail	F1	E1	C3	
9 a.m.				
474 ♂ ad <u>Bolomys</u>	B3, F2	C2, A1	B1, B4	
475 ♀ " " not open	B2	C1	B3, C2	
476 ♂ " " one tag malfunction (see later)	D11, A9			
479 ^{new} ♂ yg. "	D2	E4	F2, F1	
480 ♂ ad "	H7, H5	F9	H4, G4	
— yg. " escaped untaged	H6			
12:30 p.m.				
— dead ♀ lact. <u>Bolomys</u>	A10			
481 ♀ ad <u>mg. n.b.</u> "	G1		H2	
dead ^{new} escaped juv. <u>Bolomys</u> .		D10		
<u>escaped (tagged)</u> "		C1		
478 ? <u>darwini</u> short tail, big ft.		F10	E11	
482 ♂ " pale back, big feet		G8		
9:30 a.m.				
484 ♂ yg. <u>Bolomys</u>		H5, G4		
485 ♂ ad "		G1	I1	
486 ♂ ad "		A9 A10†		
1 p.m.				
487 ♂ ad. "		C11		

Quercus study grid (cont.)

8 a.m.

- no tag o Larmini medtail, dark
- " " ♂ " shortish tail, pale

Oct. 16

C7

H6

1 p.m.

— ♂ ad Bolomys

A9

— baby "

E11

— escaped, may have been tagged one

H3

— ♂ Bolomys

I5

9:30 a.m. 7 Bolomys; at 1 pm 5 Bolomys.

~~Photo taken~~ Carol saw a lizard on the llama trail but not on the area. also a fox near the tent. at dusk put 17 steel traps and about 15 small and large Skunks in rocky - caverny place above camp; albicoma tracks in dust.

Oct. 16

Carol found incubating Caps unmolested; below freezing every night. Only one darwinia in traps. On grid at 8 a.m.: 6 darwinia and 7 Bolomys. Two of the darwinia were new ones, one with medium length tail and dark, other short tail and pale. All the Bolomys tagged ones.

Picked up traps at 1 pm: 3 unmarked Bolomys and 6 marked and 1 escaped unrecognized. I retract former statement: Both Phyllotis and Bolomys use pure clumps of Polyglossa - but they seem to prefer grass or cactus or something else instead.

Temperature under rocks out on pasos near the lizard rock at 6:30 a.m. (with same size as lizard rock and thermometer $\frac{1}{2}$ inch in ground): 5° and 6° C.

Oct. 17

Tarata

Oct. 18

"

Oct. 19

Drove up to Yareto Camp (14,700') for an hour where counted hidehole at certain stakes where mice were caught: A8-2, B1-2, B7-0, B¹¹H-2, C10-2, D11-2, E6-0, E8-0, F9-2, F13-3, G8-1, G12-2. Climbed up to the hummer nest: an adult flew from the cave mouth ^{11:15 am} or region of cave mouth while I was still 25 yds away. I waited about 15 minutes and it did not re-enter. When I entered the cave it appeared again outside. Could see ^{nor hear} anything in the 2 nests.

Then drove to Capazo and Aconawara. Ctenomys peruanus digging just north of Capazo, but saw ~~and~~ heard none (1:30 p.m.). Had lunch ^{near} ~~at~~ our former campsite 2 mi N Challopalea, 14,000 ft. The 3 tolas are common there: Baccharis, Lepidophyllum rigidum, and L. quadrangulatum.

Drove to Aconawara 3 p.m. a few huts, a chapel, and a school. Photo of school & teacher Mauro Sanzo Vilca, Correo Central, Juli, Calle Imprenta 122. Saw house cat in Aconawara (14,000 ft.).

Camped in tola - Festuca ^{orthophylla} - Pyrenophyllum 1 mi SW Aconawara and set traps through tola and along an abandoned stone corral. Vegetation almost entirely Lepido rigidum and these other two. Lots of open two burrows. Put out 35 large theromys ante put out MS, and Seth large theromys ante caught an Elgmodontia before 8 p.m. at an open two burrow.

Oct-20 Fantastic frequency of lightning at 3 or 4 a.m. centered around a thunderhead very low on the northeast horizon. Night clear, calm, minimum 2° F. My traps held 1 Bolomys, 2 Elgmodontia, and 1 Ph. sublineatus? Galeomys? In trap ~~at~~ one of the Elgmos appeared to be bipedal. Ante caught 2 Galeomys, Elgmos, and 1 Bolomys (about 6:30 a.m.). Saw Bolomys at 7 a.m. There are a few heads of pillar cactus, much higher and more spheroidal than those so far seen. Also, around a rock hillside in the tola, were some Stipa sp.. Heard tinamous, Carol found rhea feathers and Sandy a snake skin. This location 1 mi SW Aconawara, 14,000 ft. Nobody saw or heard atus - two to go into all these burrows, although Carol saw a guinea pig outside one of them in open "pampa".

Left 10:30 and stopped at Capazo, then to a tola - brush grass study area 2 mi west of Challopalea, 14,000 ft. Carol and I

laid out grid 10x10 with 20-m spacing. Lots of tussocks but saw none. Set 100 traps at dusk. Windy, ants & Seth set MS and live traps.

Oct. 21 $\frac{1}{2}$ mi. W. Chalchepala, 14,000 ft. night clear calm, min 6°. Long grid at 5:15 a.m.; 2 Eligmodontia ♀♀. Again at 8: nothing but saw Solenus multiformis at F $3\frac{1}{4}$ mouth of burrow, and L. alticolor at 16 running into the bush, Parakeets flew over grid + caracara along river. Counted sets of two-tussock mounds on grid; 59, but hard to tell which are occupied. The subsoil is not moist, so even fresh digging looks oldish & dry. Saw no tussocks and heard none.

ants caught 1 Colonyr. duella, Eligmodontia, + sublinea. Seth caught 1 Ph. boliviensis, 1 Colonyr. berlepschii, and Eligmodontia.

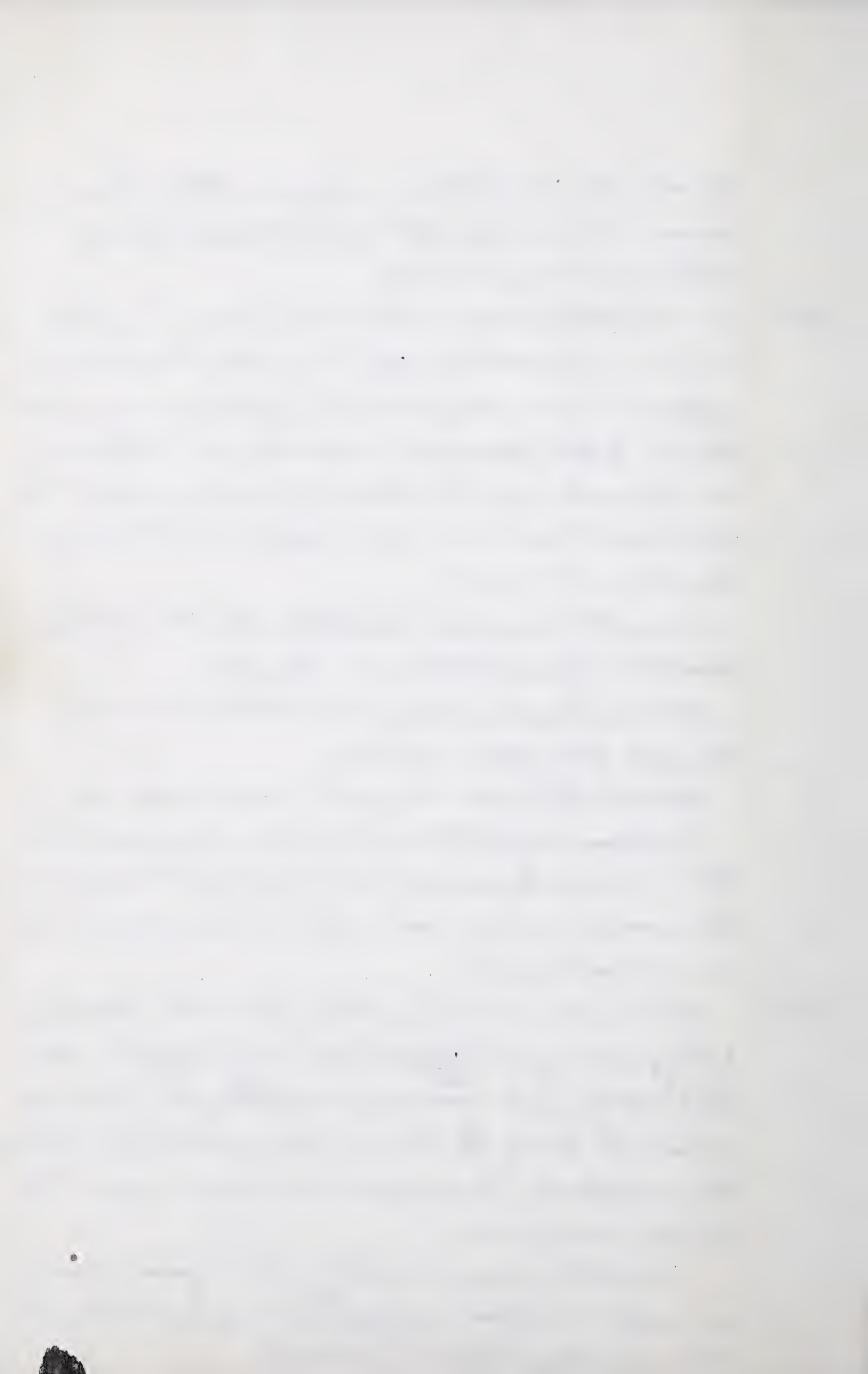
ants says Ph. sublinea droppings are small spheres. She saw Ph. boliviensis eating Zephids. rigidum.

Carol notes that the south side of upstate is always the dead side.

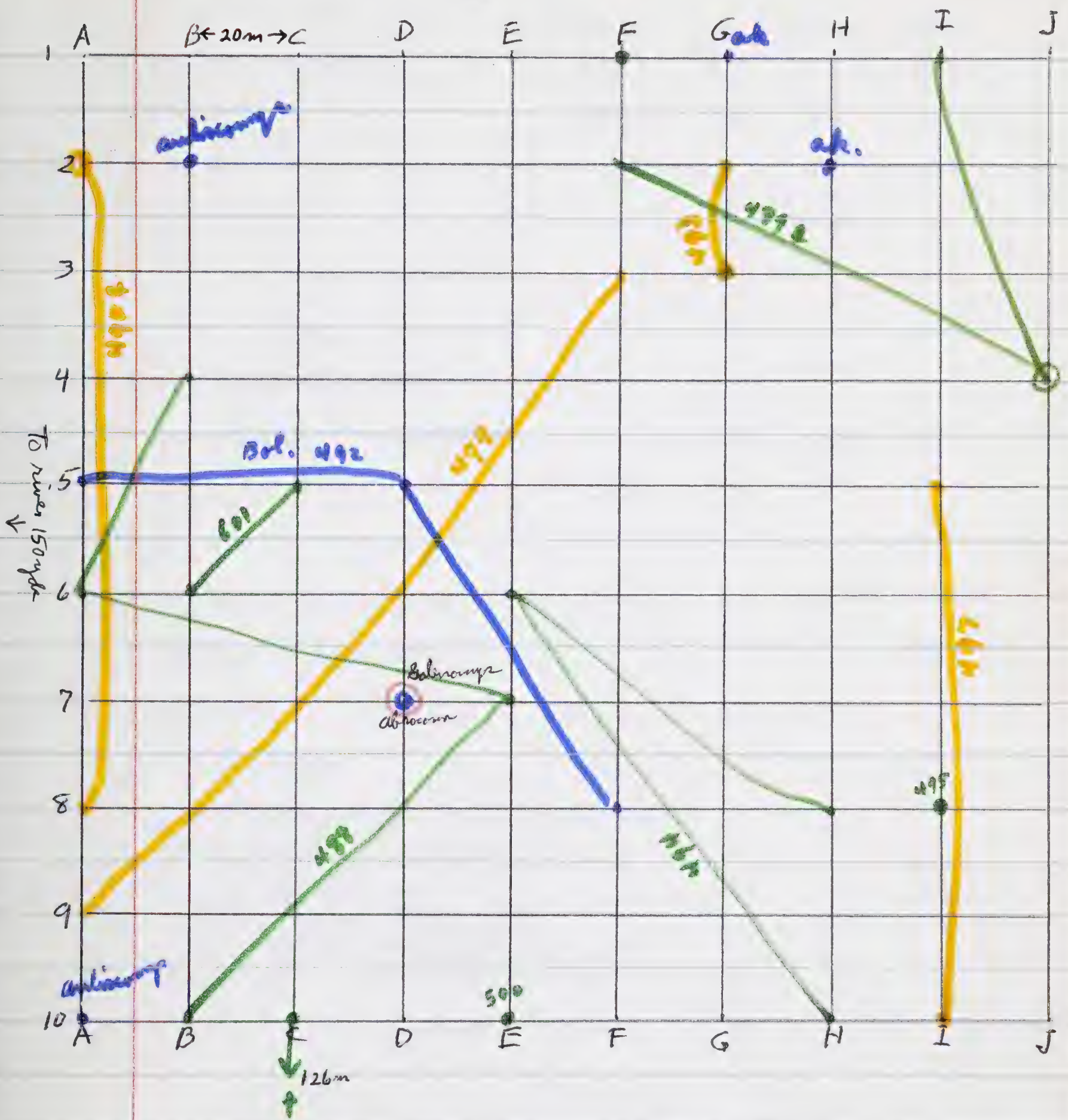
In afternoon (windy) plotted clusters of two diggings and rated them 1 (very fresh, surely today), 2 (fresh, surely last 2 or 3 days), and older (more than 2 or 3 days). Ignored really old, presumably abandoned ones. at least 28 sets.

Oct. 22 night clear, calm. min 8°. Grid traps at 5:30 had 6 Eligmodontia, 1 Colonyr., and 1 juvenile Abraona (frozen). Ants caught a large Phyllos. darwini in the ~~base~~^{hut} ruins 100 yds ^W of grid. Fauna now includes Ph. darwini, Ph. boliviensis, Colonyr. duella, Ph. sublinea?, Colonyr. berlepschii, Ctenomys opimus, and Abraona cinerea. The boliviensis near the river.

Excavated the burrow in part of which the juvenile Abraona was caught. A typical 2-ft ^{tussock} grass nest a few feet down, but otherwise 10 yds of typical two-tussock



Tola area $\frac{1}{2}$ mi. W Challopalco, 14,000 ft., Dept. of Tacna
3,24 ha.
 ↑
 East



12 Elapmodontia caught on area. Simulid dep 12.38, home range 92 m
 density 1.81 per ha. 1.01

4 Ctenomys opimus (av. wt. of 4 nearby 241g)

2 Auliscomys boliviensis sublimis

2 Abrodon andinum (both near rock)

1 Abrocoma cinerea juv (28g)

1 Galenomys (34g)

1 Bolomys berlepschi

caught within 150 yds.

Ch. darwini Auliscomys

Calomys dwalli Boliviensis

1 Zoalemus multiformis

8 " alticola

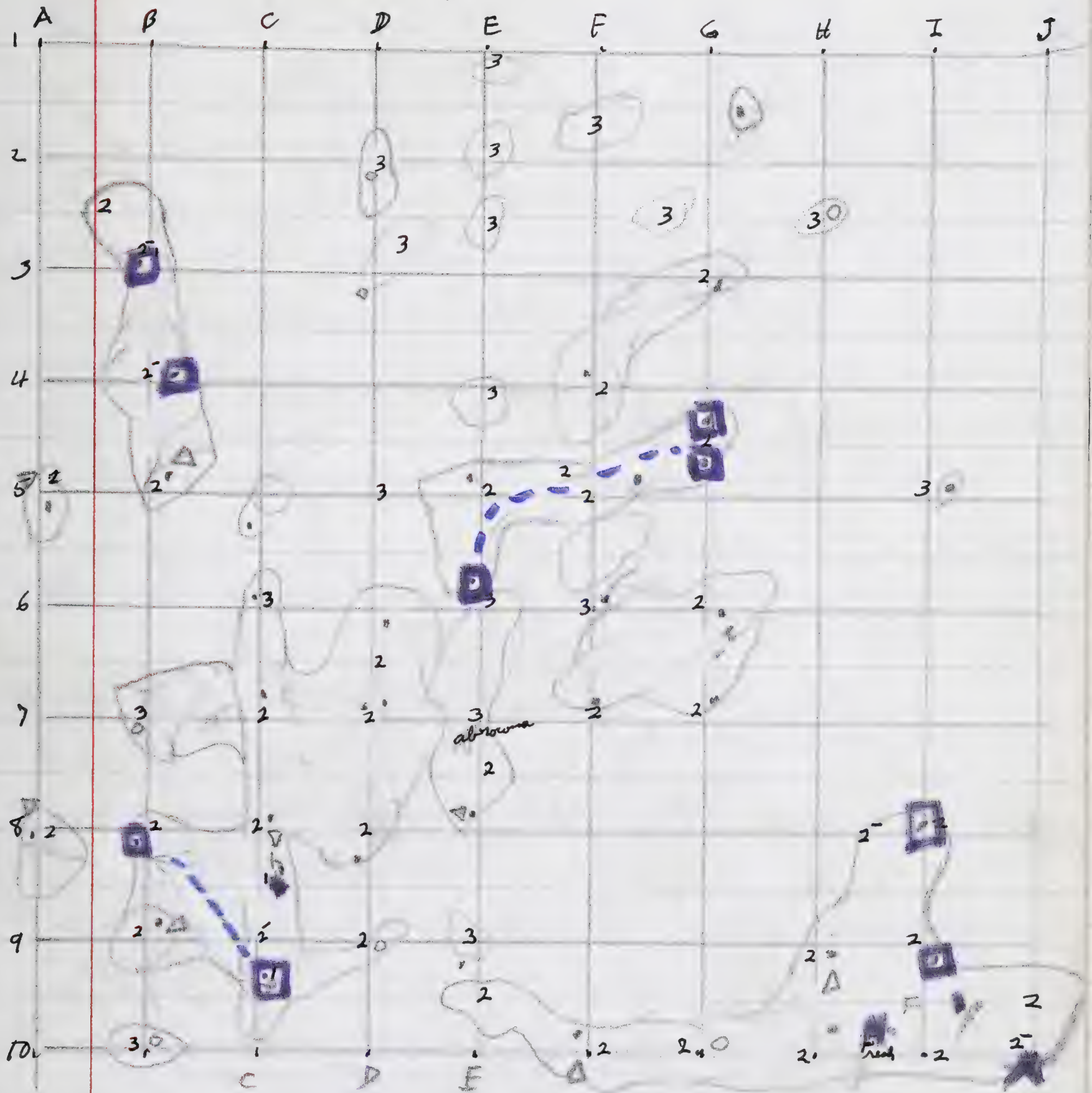
+ 2073 of the
 amphibia
 near

since on tola grid		Oct. 21	Oct 22	Oct. 23	Oct 24
488 ♀ ad Eligmodontia	B10	E7	A6	B4	
489 ♀ " "	J4	F2	J4	I1	
490 ♀ " "		A2	A8	A2	
491 ♂ " "		C10	correl + 140 yds		
— juv. afroscorpa dead		D7			
492 ♂ ad Bolomys		F8	D5	A5	
493 ♂ ad Eligmodontia		G3		G2	
494 ♀ yg ad " Vag. open	H10		E6	H8	
495 ♂ ad "			I8		
497 ♀ ad "			I10	I5	
498 ♂ juv. akodon andinum			H2		
499 ♂ ad Eligmodontia			F3	A9	
500 ♂ ad big "			E10		
601 ♀ ad vag. open "			C5	B6	
602 ♀ ad black vag. not open Auliscomys sublineis			B2		
— ♀ N.O. ad big Phyllotis sublineis					A10
— ad Galenomys					E7
— ad Eligmodontia ventrotagged					F1
— akodon andinum. leg. hard none					G1
Lizards:		♀ multiformis	F3 1/4		
		alticolor	J6, J6		
		"	J1		
		"	A1		
		"			
		"			
			D 8 1/4		
				A4	
				A4 1/2 another	
				A6	
				B6	

Tolo area: $\frac{1}{2}$ mi W Challofalea, 14,000 ft., Dept. of Tama
TULO SIGN

East
↑

to river 150 m
←



10/21 - estimates of fresh (1), new (2), oldish (3) tuso burrows

10/22 agreed well. 9-12 a.m. opened up burrows at pencil dots.

Δ = opened up morning of 10/23

□ = plugged by tusos between 10 a.m. 10/22 and 10 a.m. 10/23

○ = could not find ~~any~~ burrow to open up (2 or more tries)

Bq-Cq connected by old burrows.

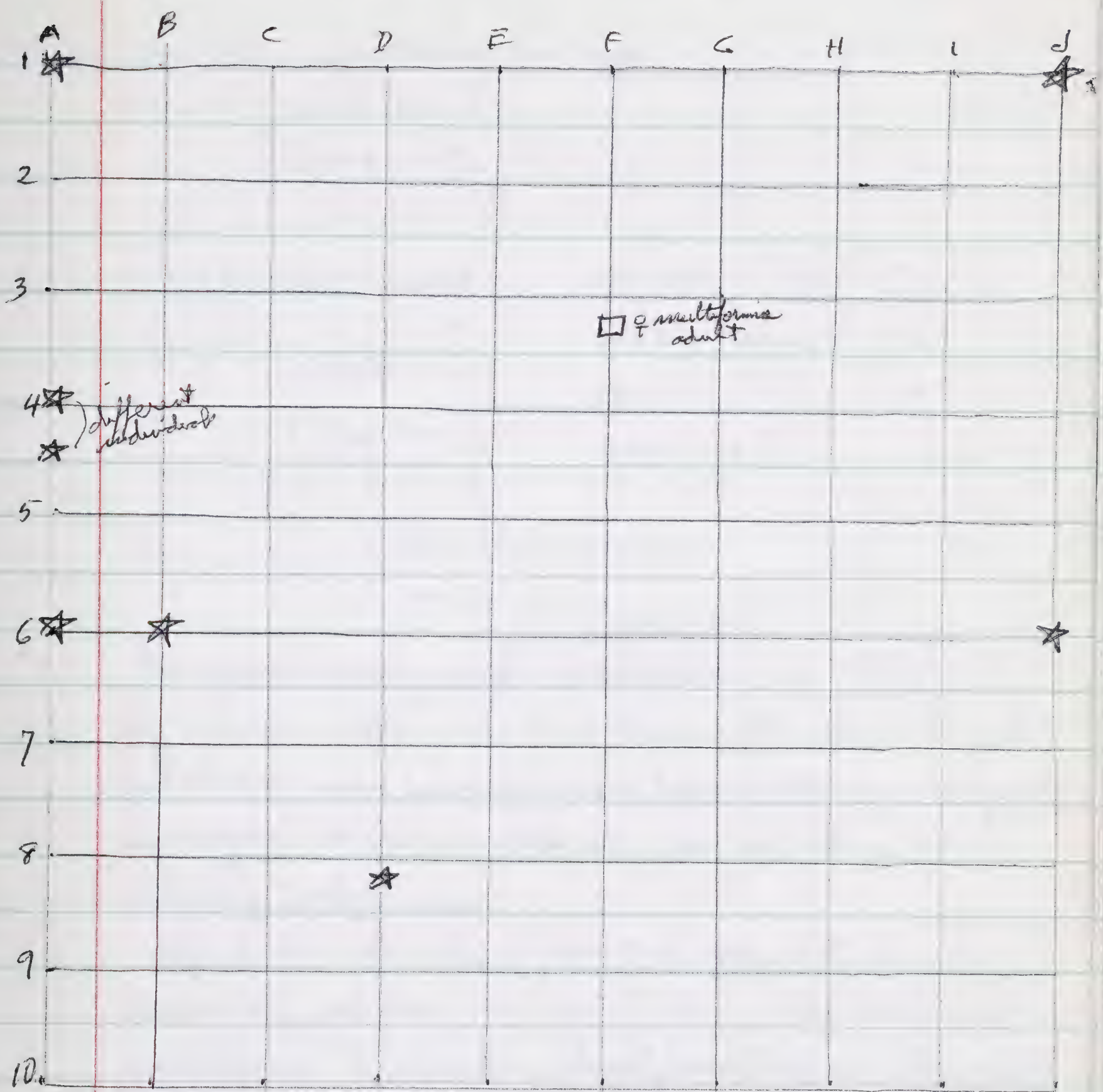
B8-Cq " " 2- - - - -

F5-F5 fairly good connection

F5-G4 $\frac{1}{2}$ fair connection, one negative.

Pearson
1971

Lizards on Tola study area $\frac{1}{2}$ mi. W Challopalea



□ = *Gecko multiiformis* = 0.31 per ha.
 ★ = " *alticola* = 2.47 per ha

The ~~best~~ sampling of the tola study area probably is a pretty good representative sample. The area itself looks almost entirely the same (or Tetraglochin) found near the tent. Noteworthy is the absence of rocks and the presence of trees - trees and their prodigious tunnels (and huge "home ranges"). On the hills above Challopalea (north and east) are lots of Quercus, as well as above the pass to Amosarea (at least 15,000 ft. ^{tree at}), wind!

Oct. 23

night clear, calm. Various soil temps:

7:40 a.m. 1" deep in shade 2°
 " 6" shade of car - trees 3°
 " 1" " " " - 3°

on area 8 a.m. sun 1" deep 0°
 " " " " " 9°
 " " " shade of bush - 10°
 " " " 6" trees sun 8°
 " " " " " " 8°
 " " " " " shade 5°
 " " " " " sun 8°

1 p.m. sun 4" deep 17°
 Open burrow sun 6" 12°
 closed " " " 18°
 Excavation 8" 14°

near camp is Meryx reevesi (or tetrogaler) and Neotoma but they are rare on the grid. Have not seen Stipa ichu on the grid but there are some bunches near a large boulder maybe 50 yards from the grid. at another area Stipa also grow only near a rock outcropping in the pampa.

Elgmodontia when released from traps frequently seems disoriented and runs from hole to hole as though looking for familiar terrain. Twice when released from traps, an Elgmodontia with matted or wet fur stopped almost immediately and dived by squirming in the dirt. They run like a Peromyscus, not bounding like a Dipodomys. None have died in the traps in spite of night temps down to 1° F.

The trees here are enormous, rarely seen (only Carol has even gotten a glimpse of one) and do a lot of digging. Earth mounds containing 5 gallons are common, and on the grid it is beginning to look like they have very large ranges, moving across the tundra 50 or more yards leaving a trail of ageing earth mounds behind.

They frequently nip off tola twigs of pencil size. a dozen nests dug up have all been made of grass pieces cut to about 3". In only one tunnel base ^{actually found} ~~found~~ cut twigs of tola.

Afternoon very windy, evening calm.

Oct. 24. Temp. record beginning Oct. 23 following a minimum of 9° :

8:15 a.m.	42°		9:05 p.m.	30°	no wind
9:03	49°	clear, no wind.	11:40	18°	clear
10:30	57		1:00	15°	"
11:00	61		2:30	12°	"
11:50	61	wind beginning about 12:00	4:00	11°	"
12:50	61	- Windy, fluffy clouds to east	5:00	12°	"
1:25	60	- Windy	5:15	14°	"
2:15	60	"	5:30	17°	sunrise
3:00	56	"	6:00	18°	
3:45	54	"	6:10	21°	
4:30	51	"	6:50	30°	
5:15	47	"	7:05	30°	
5:40	43	"	7:20	32°	
	sunset				
5:45	42	"	7:47	39°	
5:50	42	less wind	8:00	44°	
6:05	40	" "	9:30	54°	
6:30	36	no wind	10:55	60°	
7:10	34	blustery	12:00	61°	

sky overcast and to ^{N, S, & W} west clear throughout.

Picked up grid traps at 6:30 a.m. a Golenosaurus in the same trap as the abrocoma day before yesterday. It had been set alongside the excavated grass nest lying in the ditch made by excavating them

the two burrow presumably occupied by the baby abroreona.
Aunt also got a Galenomys along a wall at the abandoned
hut 140 yds west of the grid. It had greenish yellowish/sulph
in its stomach.

Hideholes at stations with mice but not covered in our regular grid
~~census~~ vegetation analysis: A2-1, A5-7, A6-1, A8-4, A9-1,
B4-3, B6-1, B10-2, C5-1, C10-2, D5-2, E6-3, E7-2*, E10-2
F1-1, F2-2, F8-1, G2-1, G3-4, H10-2, I1-2, I5-4*

Did plant census 9:30 to 11:30, tree analysis, and hidehole count,
then home, arriving Tarata about 5 p.m.

Oct. 25 Capture Elgnodonta are completely gentle, easily handled, at
blossoms of Lepidophyllum rigidum. ♂ and estrous ♀ lived harmoniously
in same trap and cage. Bipedal stance looks like Dipos or Perognathus.
Sometimes a bipedal jump, but mostly move like Peromyscus.
Galenomys was completely docile, almost plastic in cage.
never doing anything.

Oct. 26 Drove with Carl + Benson to Yareta camp. Thin overcast at
Tarata and at Yareta camp.

Field characters for distinguishing Galenomys from Rh. sublimis:
Galenomys has wide hairy feet, white upper cheeks, fatter tail. ^{sublimis's scats} not long.
Scats from 1 mi. SW Anconarca: (not counting snake skin found by
Landy):

Scats from $\frac{1}{2}$ mi. W Chalchopolea: 6 scats in one collection contained
hair and two bones, no mouse or bird bones.

11 scats from Anconarca \rightarrow Calomys drilla, 3 larger mice of at
least 2 spp., and at least one bird and a scorpion/pincer.

Oct. 27 Tarata

Oct. 28 Drove to Hda. Pairumani (Ontave) and camped I think about 100 yds south of our 1946 camp site. Drive took most of day. a good stretch of mixed Festuca - ichu ^{between Challopalea +} ~~south of~~ ^{Wagocruz}, and lots of good alfalfa pastures. Saw no deer or tinamous or vicuñas. Weather somewhat overcast. Benson caught 12-14 inch trout.

Oct. 29 Put out ^{minimum temp 24°} ichu grid 8x12 rows with 15-m spacing. Fairly heavily grazed and, in search of some rock outcrops, it contains some fairly bare patches. Probably "typical" of the area.

In the p.m., the owner dropped in; Srta - Gonzales Armat, sister of the owner of Hda. Pairumani. She says we are on Hda. Ontave and that it has not been nationalized. Various people fished without great success. Put 9 traps around adobe bricks piled near camp. Slight overcast all day.

Oct. 30 Minimum 20°, mostly clear but not entirely. 9 live traps caught 1 osilae and 1 Calomys ducilla. Bird 2 osilae, 1 berlepschia, 1 duella, mostly near grid. Anita's live traps in gulley caught 3 osilae; Benson's snap traps caught 1 Ph. sublimis, 2 akodon bolivi, and 4 osilae. Later in the morning his live caught 2 Calomys amoenus and 2 amoenus got caught on the grid between 6 and 9 a.m. Moon 3/4 or 4/5 full. Day about half cloudy - bright.

Oct. 31 Cleared up over night; minimum 4° F. Benson with 30 snap traps at base of a cliff north of camp caught 4 osilae. Anita with 17 large shrews at the base of the cliff shown in the altiplano paper caught 1 Calomys berlepschia and 1 Ph. osilae.

Benson + Anita drove yesterday to the Pampa de Quelcota in search of Stenomys peruanus. They found old old burrows but nothing fresh and heard none.

Lehu grid

		Oct. 30	Oct. 31	Nov. 1	Nov. 2
603	♀ ad. vag. not open <u>Phyll. osilae</u>	F1	E2	C3	B3
604	♀ " " " " " "	F6	F4		F4
605	♂ ad. <u>Calomys ducilla</u>	C6	F7	C8	
606	♂ ad. <u>Bolomys berlepschii</u>	B3		A3	
9:30 am					
607	♀ ad. vag. open <u>B. amoenus</u>	K1			
608	♂ ad " "	I3	D5	J4	
609	♂ <u>Calomys ducilla</u>		L3		L3
610	♂ ad <u>Ph. sublimis</u>		L7		
same traps	611 ♀ ad <u>Bolomys amoenus</u>		J2		J2
	612 ♂ " " "		J2	J1	
613	♀ ad <u>Ph. osilae</u>		F2	F3	E2
614	♀ " " "		D2		
10 AM	616 ♂ ad <u>Bolomys amoenus</u>		G3		
617	♀ ad vag. open " "			I4, I6	
—	♂ ad dead " "			I1†	
618	♀ ad. vag. open " "			F1	J1
620	♂ <u>Bolomys berlepschii</u>			B1	
—	♂ ad <u>Ph. osilae</u>				H1
—	— <u>Calomys ducilla</u>				H4
—	♀ <u>Ph. karwinskii osilae</u>				E4

Total mice caught on area: 8 Bolomys amoenus, 6 Phyllotis osilae, 3 Calomys ducilla, 2 Bolomys berlepschii, 1 Akodon sublimis ×

Ranger and densities: amoenus 41 m. = ^{1.73}2.66/ha; osilae 40 m = ^{1.47}2.24/ha;

10/30 10:30 small lizard 18 ducilla 29 m = ^{0.81}1.5/ha; berlepschii assuing 30 m = ^{0.46}0.76/ha; sublimis assuing 30 m = ^{0.27}0.38/ha. Total mice = 7.19/ha.

Ants are fairly common here. Have flickers? The ~~cliff~~ bank of the gully next to camp is riddled with burrows and is a center of bird activity:

Nov. 1

Clear, calm overnight; [?]min 9°. Noon very hot, wet-dry bulb at 1:30 71°-42°; 2:30 still 71°, clear, breeze but felt stifling.

Benson caught a Neotoma in thick ichu along creek at 5:30 pm. (in snap trap but it survived overnight for cytology). He also caught 2 Amblyscopus pictus in heavy thick ichu near creek, also 2 osias. Anita in 19 large Sturnus at base of the cliff toward birds caught 3 berlepschi and 2 osias.

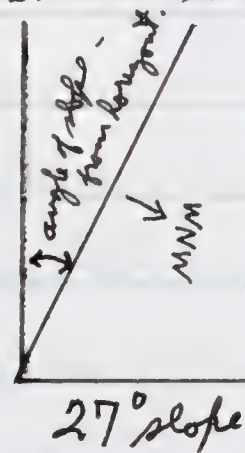
Looked for frogs after supper, but only tadpoles in a shallow pond along the road. Full moon.

Nov. 2

Night clear. Pulled up traps at 6 a.m. maybe a Ph. darwini on the grid; see specimens. Then Carol and I finished plant survey on grid. Had most all species of plants except the bird-nest cactus. An Oreotrochilus visited 4 or more of our red yarn markers while we were surveying. This area,

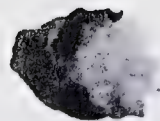
like all our study grazed; this one by cows. Horses nearby.

on the area and on various plains or others.



areas except Tillandsia, heavily Ilausa, Alfoceros, Sheep, and There are traces of ancient agriculture hills nearby, plus recent

No. of hideholes at mouse sites other than regular stations: A3-0, B1-0, B3-3, C8-0, D2-0, D5-0, E4-0, F1-0, F2-0, F4-0, F7-0, G3-1, H4-0, I4-0, J2-0, J4-0, K1-0, L7-1. In gathering these data it appeared that the mouse sites were near outcrops, not necessarily ones with hideholes. In other cases there were hideholes beyond the range of the 2.2 meter stretch.



For birds note that there was nothing higher than $2\frac{1}{2}$ feet or 3 feet on the ichu area (not on the tola or Tillandsia areas).
 Summary of plants on ichu area: no. of hideholes per plant station 0.34; hideholes per mouse station 0.61; hideholes per no-mouse station 0.09.
 Profile: 1st half meter 81.0% of board occluded; 2nd half meter 4.1%; 2nd meter 0.03%. Hoop sampler % coverage ^{50.0}~~52.7~~%; % coverage of mouse stations 54.6%; % coverage at no-mouse stations ^{48.0}~~52.0~~%.

nov. 3 Tarata. I put 17 museum specials and 1 large shermans in the big rocks south of town and along a stone wall with scattered bushes at the edge of a clover + alfalfa field at dusk. Benson put 20 MS along a wall at the edge of a young-corn field.

nov. 4 night clear, light frost on clover leaves. Combined catch was 13 Ph. magister and 3 Akodon boliviensis. Below the level of the big rocks, every mouse on the entire hillside surely lives in a terrace wall. Since all of Benson's mice came from about 100 yds of wall and surely don't include all of them, let's say ¹⁰~~12~~ Phyllotis per 100 yds of wall = hundreds or thousands over that terraced hillside.

at 3 PM drove up to the acagiva camp with Benson and I put out 40 small ^{NF} shermans, mostly along road walls, some in thick brush in a gully across the road. He put out \pm 50 large shermans and maybe 30 museum specials. Clear.

nov. 5 night clear + calm, breeze at about 4:30 a.m. Breeze on puddles. my traps had 7 Phyllotis (mostly doramin but at least 1 magister) and 2 Bolomys berlepschii - all Phyllotis put up except 1 doramin escape.

One of Benson's trap lines ran along the acequia from about A7 of our grid to the other campsite upstream. On this part of his line he caught 4 *Phyllotis* - all tagged (428 ♀ ^{magister} V.O. near A4, 448 ^{magister} 20 m east of A3, 437 ♂ 60 m ± east of A1, and near A5. He also had traps on the slope north of the reservoir and caught no. 433; this must be at least 200 yds from the nearest part of the grid.

Reservoir was empty at 6 pm with no water going in. at 6 a.m. it was full, with no water going in. (They must fill it at night to provide maximum ^{but water flowing} irrigation water during the day. out to join the acequia)

Dissected about $\frac{1}{2}$ pint of carmine droppings from the gully near Tillandsia study area. Contained mostly invertebrates (such as scorpions), bird (only a few feathers), garbage (tin foil, cellophane, watermelon seeds), 1 mouse incisor, teeth and apices of a hystricomorph such as recocha! Also belly scutes of a large lizard or of a snake. No other mouse bones, no gopher bones seen.

Nov. 6

Left 8:45 for Tacua and coast. Dry dry dry until after ^{"north of"} Santa Colorado, then some flowers begin to appear. Soco enters at Quebrado El Burro, then a medium of green on a 1500 foot ± rocky cliff near a sea lion colony at Catete morro Sana, which is 65 km west of Tacua. Went as far up the coast as a sign but at a cave occupied by a guano caretaker who had an ancient gun and about 15 pairs of cordero feet. a dark lively small lizard lived right at the edge of the surf. Made camp about 300 ft above the rocky

beach under the cliffs. Put out 3 rows of traps (35 small shrews) at 15 m intervals, 25 m. apart across what will be the study grid. 7 or more condors went to roost high up on mounds and. Hundreds of goats grazing up in the greenest part up high. Plus a few cows. Weather sunny with a sea haze; felt muggy to us accustomed to Tarata & higher.

Nov. 7

Morning cloudy until 9 or 10 o'clock. Condors left their roost before sun after much flexing of muscles and ~~stretching~~ trial flapping of wings. 5 Phyllotis ^{darwini} in traps on grid and Benson caught 3 adult and a juv darwini in snap traps below road.

Staked out a 10 x 11 15-meter grid in stoney ground between the road and cliffs. Lots of flowers of many many kinds; only a few places with sparse scattering of grass. Lots of a yellow flower. broad leaved dewy bush, lots of flax and a white-flowered shrub-leaved flower with long long stamens, beautiful rich colored nasturtiums in the stoney "river" two of which "flow" across the grid. They carry a river of green man-root down from the greener heights up above. Morning glories blooming, a ~~mallow~~ and many many others.

a burning owl has his burrow close to camp; fox droppings everywhere; turkey vultures common, even a few feet from sea lions; also a few flock vultures. Ali thinks she saw an abrocoma in one of the rock

river a little above the grid, and Benson saw what may have been otter tracks along the ocean while setting traps along the beach. In various puddles and seeps we have found several worms, a house mouse, an akodon?, and many Phyllotis.

The grid is loaded with lizards. Put traps out 4 to 6:30; small lizards were still out until about 6 p.m.

Nov. 8

Night and a.m. overcast. 8 Phyllotis darwini in my traps. Benson got some darwini plus a mus near the beach. He saw ^{an} otter in the surf, plus droppings that contained mussel shells (small) and fish bones. Anita saw an otter curled up asleep on the beach, which Benson later collected. Left for Tacna 9:30 a.m. and spent all day getting car Rodaje, money, etc. Returned 6:30. Ride from Boca del Rio is 15.1 miles, almost all straight except for the zig at Quebrada del Buvo, so maybe 14 miles up the coast from Boca del Rio which on our road map is Las Baños. The cordillera cliff is surely morro Sama.

Nov. 9

The night and all morning overcast or cloudy bright. Only 3 mice in my traps and 1 Phyllotis in Seth's in cover rocks. Spent morning mousing and working lizards on study area. One big lizard was out at 5:30 a.m., but saw no others until much later. 3 or more condors flying at 5:35, but people were near cliff. Marked 17 lizards between 8 and 11:55.

a passerby who owns goats & cows says it actually rains in May-June-July.

Found about 100 terminal prints of scorpion tails on one rock. In afternoon climbed to top of morro Sama; it is

Soma grid. 10x11 stations at 15-min intervals.
Mojo Soma, 200-400ft, 65 km W Tacna

	nov. 7	nov. 8	nov. 9	nov. 10	nov. 11
621 ♀ juv. <u>Phyllotis darwini</u>	B2-A3	A1	B1	A2	^{10/12} A1
622 ♀ <u>ad</u> v.o. " "	B3-A4			C2	C4
623 ♀ juv. but v.o. " "	A9	B10 NO.		A10	B10 A10
624 ♀ juv. v.o. " "	D4-E5			C4	E4 D5
625 ♂ juv. " "	G8½				
626 ♂ <u>ad</u> " "		A2		A1	B4
627 ♀ juv. NO " "		A6			D7
629 ♂ <u>ad</u> " "		B4	F5		
630 ♀ juv. < 20g v.o. " "		F7		D9	F7
631 ♂ juv. but developing " "		F3			F3 ct
632 ♀ <u>ad</u> v.o.		I1		I1	
633 ♂ <u>ad</u>			J7		
634 ♀ juv. v.o.				A3	
638 ♂ <u>ad</u> .				B4	C5 E6
639 ♂ <u>ad</u> .				I8	
640 ♀ juv. v.o.				A6	
— ♂ <u>ad</u> escaped				D3	E3
644 641 ♂ <u>ad</u> ,				G7	
— ♀ <u>ad</u> reintroduced					A3
642 ♀ <u>ad</u> "					B8
— ♂ <u>ad</u> "					D6
— ♂ <u>ad</u> "					F1
— ♀ <u>ad</u> "					G2
— ♂ <u>ad</u> " (maybe overlooked yesterday)					K9
— ♀ <u>ad</u> " (surely " ")					K10

no. of hideholes at mouse sites (32) = 3.750

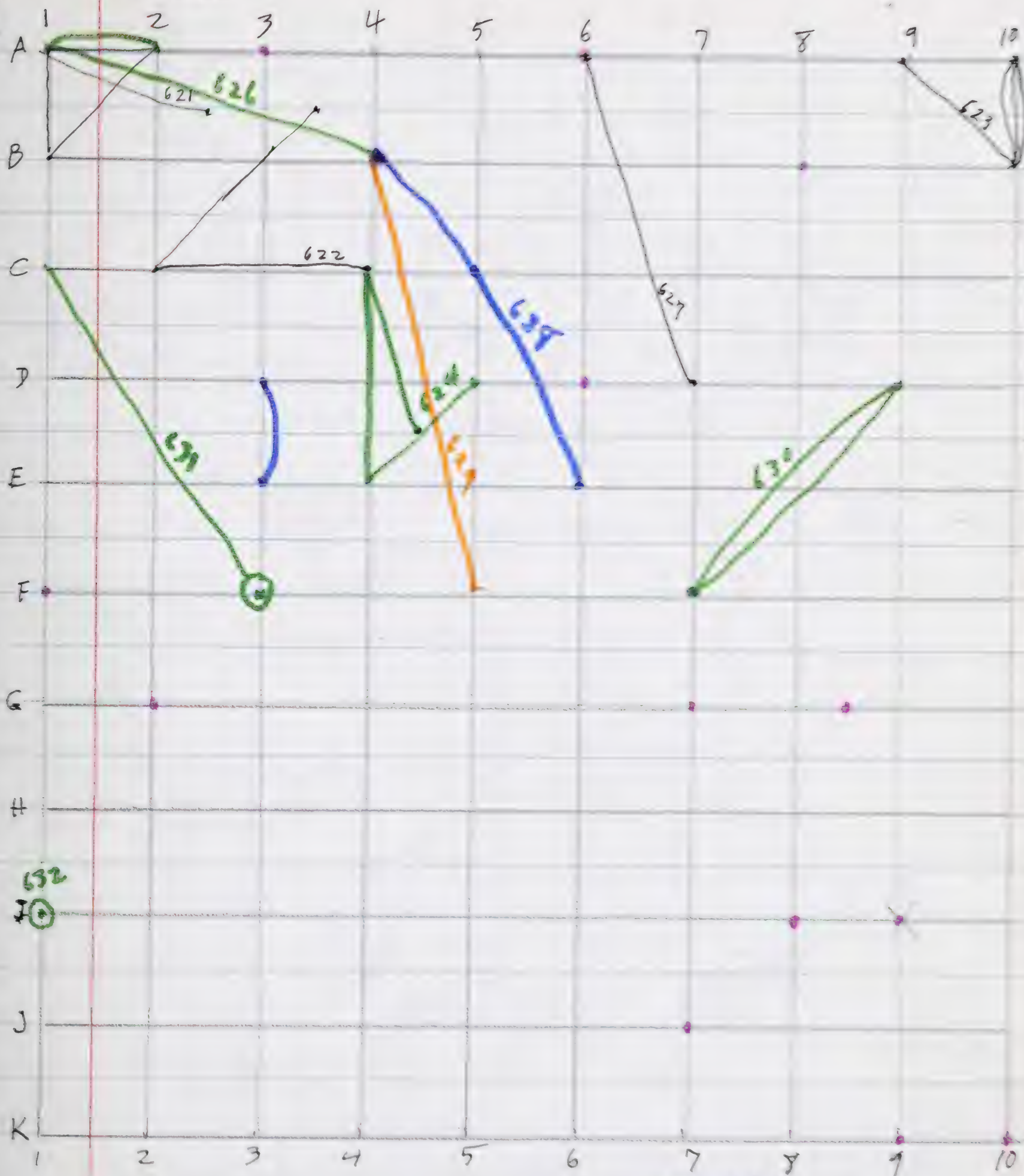
" " " at no-mouse " (31) = 3.32

~~Final list for order~~

2.025 ha, 15-m spacing.
110 stakes

to person
↑

all Phytolacca dasycarpa



621-23

621-23 632-8

 $626 - 47 = 579$

622-31

$$623 - 21$$

124-30 12434

$$627 - 47 \quad \{ 36$$

17. *Paradise 25*

629-62

630 - 42

31-54

area occupied = 7.18 ha

Linear Interference on 11/2 corrected for 2 miss
overlooked at K9 and K10 on 11/11:

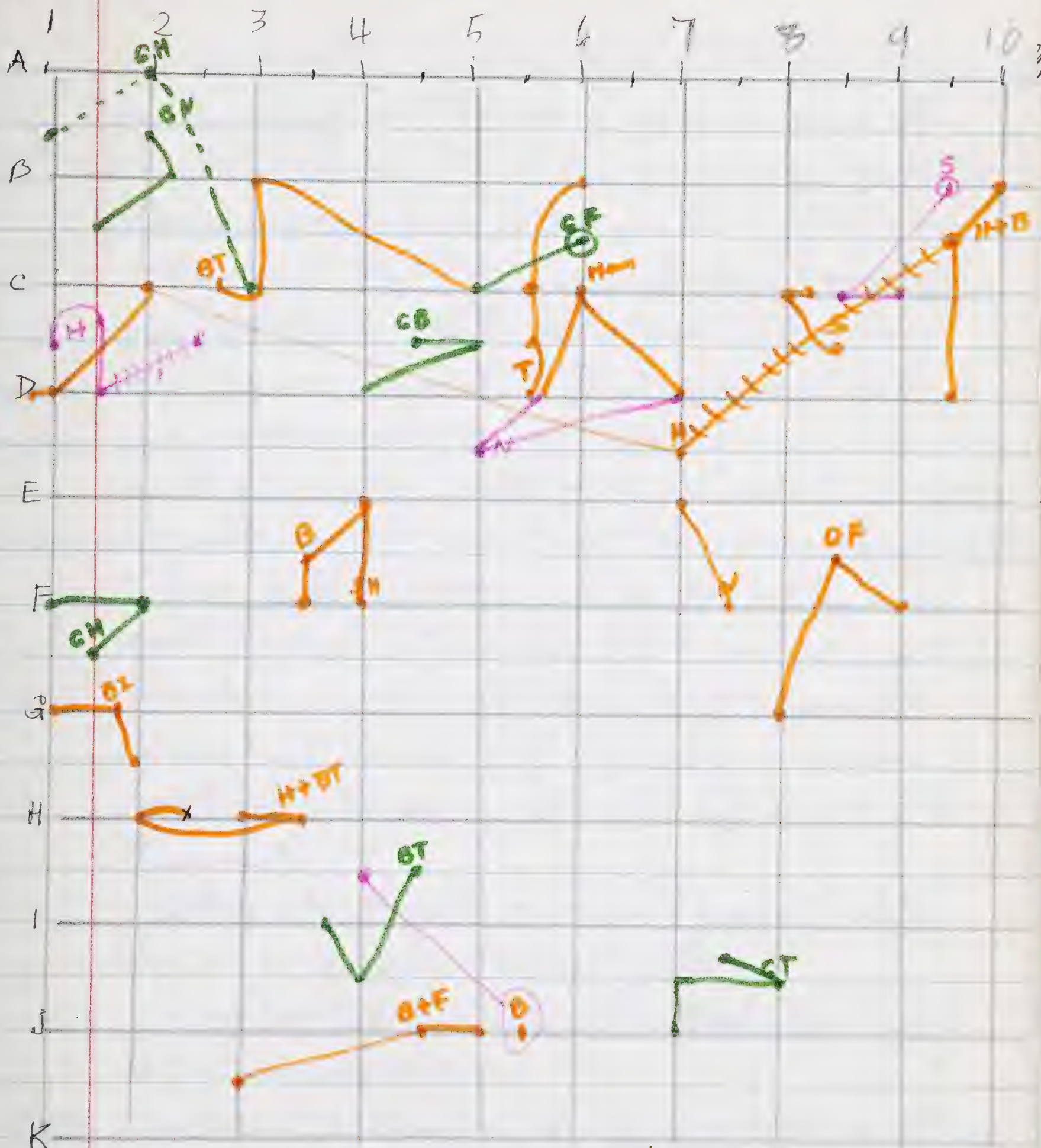
$$18 \text{ miles} \times \frac{14}{9} = 28 + 2 = \boxed{30} \text{ miles}$$

Paradise 25 recaptures
of 12 individuals.

Similar to def for adults only
 $= 7 \times \frac{9}{4} = 15.75 \approx 16$ Some range of adults = 40

6.52
- 9.45 x 10

LIZARD HOME RANGES 2.025 ha.



Home range based on 50 resightings of ~~26~~²⁴ marked lizards = 20.3 m
= 21.99 meters. With border strip of 22 m = 2.700 ha area occupied.

Various Linear Patches: Nov. 10 8:10 am. O.P. $21 \times \frac{20}{5} = 84$. \rightarrow should be 3.4736

Nov. 11 A.M. C.A.P. ~~77~~ $27 \times \frac{41}{14} = 79$

Nov. 11 P.M. 5/19/60 $28 \times \frac{62}{42} = 145$

nov 12 ~~am~~ noon 5/people

nov 12 ~~am~~ noon 5/people
~~28~~ $28 \times \frac{72}{18} = 112 = \boxed{41/2}$
 should be 32/hr NO

1730 ft higher than camp. Set traps at the base of the cliff on the way up; about 25 mouse traps, almost all in mouse-traps at the base of the cliff. Huge rivers of mouse-traps (in floor) covering angular stone blocks - talus, a few specimens of "fig" tree, a few bushes. Near the top is another species of yellow daisy bush with crinkled rough leaves. Arrived at the top at 3 pm and within a few minutes about 8 Condors soared over, some as close as 30 ft. - young, middle-aged, and adult - judging by white wing color. Weather overcast. They stayed about $\frac{1}{2}$ hour, looking me over. Just as 3 or 4 of them had roosted and the others were about to land, 100 goats were driven over the cliff only 50 yards from them, so they left. So did I. At dusk, 8 or more were roosting at the usual spot on the cliff. A few stars at sunset.

Yesterday when the goats were mulling around the cliffs there were 20 condors in the air at one time.

A large, long-tailed, black-chinned, striped-throated and arm lizard shot? by Benson weighed 37 g.

Nov. 10

Night overcast, and all morning. Traps in the mouse-traps at the base of the cliff caught 1 mouse and 4 *Ph. darwini*. Grid caught 10 *darwini*. Marked more lizards on grid in a.m. although not quite warm enough or bright enough for large numbers. Up to 8:10 a.m. had marked ~~21~~²¹ individuals. Then went out again from 10:20 to 12:00 and cruised between each row; saw 20 lizards of which 5 were marked over = $21 + \frac{20}{5} = \frac{84}{5}$ individuals. Marked 6 of these so that as of now today there are 27 marked individuals on the grid.

no sun in afternoon either. Some fog around moon pole at 5:30 p.m. but disappeared.

Nov. 11

Night cloudy, and early AM, but cleared and ~~was~~ sunny all afternoon. Went to Taca at 8:30 and returned at 1 PM, a foot in Benson's trap at edge of camp. 8 mice on my grid. Carol + Benson tagged one more lizard in a.m. (= total of 28 color-marked lizards on the grid). At 2 pm, Carol, Ali, I, Sandy, and Anita did 2 sweeps across the grid, ^{Benson} one on each row, recording lizards. Sunny and warm. Between 2:15 and 3:40 we recorded 62 lizards of which 12 were marked ones. Lincoln Index = $28 \times \frac{62}{12} = 145$

Carol did counts in the morning and counted 41 lizards of which 14 were marked ones: $27 \times \frac{41}{14} = 79$ lizards.

at 4 p.m. went down to the ocean with the girls and saw one or more otters plus black lava lizards and red crabs like *Golapops* etc. I came home early with Benson's foot, which we found hiding under a rock with trap on its foot. After I left the girls watched an otter drying its fur in the sand only 12 feet from them.

Nov. 12

Night cloudy and morning overcast until about 11 when it became sunny enough for lizards. So after finishing the plant survey the 4 girls + I did another lizard sweep covering rows A to E on the way north and g-h on the way back, omitting, as before, row F to avoid counting same lizard twice. Counted 72 lizards of which 18 were marked ones.

This began at 11:30 a.m. $28 \times \frac{18}{72} = 112$ lizards. The grid live traps at 6 a.m. had 16 *Phyllotis*.

Temp. 6" under sunny pine sand among the flowers above the tent at 2 p.m. = 28° .

Weights of lizards: large zebra 32g, ditto 26, med. zebra 22, small plain 12, large zebra 44, med. plain 18, med. zebra 26, large zebra 34, med. zebra 12.

No. of hideholes at mouse stations not covered in plant census: A2-2, A3-3, A6-7, A9-2, B4-6, B10-3, C1-2, C2-2, C4-4, C5-2, D3-4, D5-3, D6-3, D9-2, E3-8, E4-2, E6-4, F1-3, F5-4, F7-3, G2-4, I1-2, I8-3, K9-12, K10-2.

Left for Taqva 2 p.m., home 6:15 p.m. There had been a couple of showers while we were away, and lots of snow now on rocky mountains to the north.

Evenings, perfume pours down the rocky rivers filled with 4-petal and petunias and man-root.

nov. 13 ~~Tarata~~ Rain in afternoon, then overcast evening & night. $\frac{1}{4}$ " of rain in peach can. Lots of snow on mountain north of town.

nov. 14 Morning mostly cloudy, some blue sky. A truck coming from Luro in the night reported 2 feet of snow near our yareta camp. Lots of snow visible from town. Carol's auto drove to yareta at 8 a.m. no snow!

Categories of lizards on Lower study grid:

	<u>small plain</u>	<u>small orange</u>	<u>medium ^{plain or orange}</u>	<u>medium zebra</u>	<u>large zebra</u>
marked by me					1
on 11/12 census	 		 	 	
	<u>18</u>	<u>5</u>	<u>14</u>	<u>20</u>	<u>15</u>

Nov. 15 Tarata. Benson put 10 large Sherman and 14 small folding
snermons out at the Agropeswaria Chacra late yesterday afternoon.
This morning he had 2 Akodon boliviensis and 12 Ph. magister. nine
out of 10 large Snermons contained mice; the tenth was flled out in an
acequia. Day mostly sunny.

Nov. 16 morning clear, no clouds. Ali's jeans soaking in water in patio had
ice on them, but none on water trough.

a collection of several dozen scats + pellets of fox + burrowing owl
collected at Moro Sama contained, roughly in sequence of importance,
Phyllotis, scorpion, Marimora, large bird, large crustacean,
mus, Akodon? beetle + other arthropod, small bird, lizard. one rat-
sized femur.

Nov. 17 Tarata. Some overcast.

Nov. 18 mostly clear. Drove up to acequia camp at 8 am and
counted plants and hideholes. Sunny. Still completely dry, no sign
of rain. Saw 4 striped lizards during 3 or 4 hours on the area. The analysis
of plant species revealed an enormous number of species, especially of
small capsule-bearing plants.

a bright, knowledgeable shepherd who came past looking for a
lost sheep said that he was 55 yrs old and that the abandoned
terraces near and above the grill had never been used in his life-
time and that there were no abandoned acequias to water them.
Hence, he concluded, it used to rain more. He referred with a
sweep of his arm to all the unoccupied land and refused to admit
that the lack of grass (which he lamented) was due to overgrazing.
Back at 4 pm. Saw no hummingbirds. The big trumpet bushes are almost
through blooming; many of the seed pods on them contain germs.



Nov. 19 Tarata

Nov. 20 Drove to ^{10 mi S Tarata} Rock Camp and counted plants. No change in the vegetation although there were some rain drop splatterings on the ground. Llamas were grazing in the dry wash (10,000 ft!). Saw 2 lizards on grid area, one of them a large sceloporus-like, blotchy one. The barberry-leaved thorn bush has a tubular bluish flower about an inch long. Tolamoa & tomatillos still flowering; heard Patagona. 33 species of plants in our best samples.

~~Nov. 21~~ about 20 carnivore droppings from Rock Camp contained mostly fur, including Phyllotis and Vizcachas!, also some invertebrates including scorpion, and some seeds.

Nov. 21 Drove to Yareta camp with Carol, arrived just before sunrise over the cliff. Clear & cold in morning, then clouded up about noon. Walked up to the hummingbird cave about 3 p.m.; waited out front for 10 minutes, then went inside. The two nests still there but no signs of hummers. Took photos of Yareta. No signs of spring.

Nov. 22 Señora Zavala, owner of the "our" house, who is about 50 yrs old, says that the terraces high up on the mtn. have not been used in her time or in her grandparents' time. A frost has killed a lot of the corn between here and Acapica camp, as well as in local spots around town here. Most of it 1 to 2 ft. tall. Some potatoes also frost bitten.

Nov. 23-26 Tarata. On 26th in alfalfa terraces at edge of town at 5 p.m. saw a flock of about 30 Zonotrichia capensis. There is a little more singing than when we first came, but not like in Tacna.

Nov. 27 Tarata. Every day has been sunny in morning and clouding up in afternoon. usually with a clear patch under the clouds in the west so that the sun comes through (under) the clouds from about 5 to sunset (5:45),

Drove Carol, Ali, and Sandy to the end of the road on the way to Chucatanain. Road ends about $\frac{1}{2}$ hour walk above Chistala^A, which is a tiny village in a ribbon of green irrigation at the bottom of steep bare mountains. Chucatanain is famous for fruits "of all kinds". Some of their pears, which we saw, are more than an inch in diameter!

Dec. 1 Drove with Carol & Peter to Yarete camp; arrived about 8:15. Sunny at first but soon scattered clouds. A caracara found our garbage in less than an hour. Grid ~~the~~ and vegetation looked the same; moisture in soil not far down. Saw one very small Zoogeomys atrichopus maybe 50 yards below the grid; must have been ~~the~~ recent hatchling. Measured some of the biggest yaretes, one covered an area of 32.4 m^2 . The frost bitten corn above town is still alive but looks awful.

Dec. 3 Left Tarata 9 a.m. Saw 2 T. macrotis at the barest place W of the Yarete camp (about 11 km NE Tarata) and another one with 5 young 1 or 2 weeks old in the tola about 2 or 3 miles south of Chalchopalea. Miserable stoney road from Aconamarea toward Pizacoma. At one point 5 km of beautiful new road, then impassable, so 5 km back to alternate rocky gulches. Stopped for about an hour at a tucso spot with fairly large red earth mounds and set 8 snares hoping to get Ctenomys leucodon. Got 4 sprung empties, then Carol found a mound that was not leucodon so we drove on. Two other places had peromyscus-like holes and guinea pigs, but we heard no bubbling calls.

Most of trip from Aconamarea north is beautiful Festuca and or tola (Leiodactylus rigidus) with occasional alfoja sedge. Very few people. Saw only 2 vehicles all day (Tarata to Pizacoma). Should have been

full of vicuñas and rheas. Saw none.

Camped at dusk in ichu along a stream at 13,200ft in a red-rock gorge with lots of caves. a Nothoprocta ran off as we pulled in. Day sunny and very warm; Clouds to north and east

Dec. 4 no hummingbirds or nests in about 6 nice caves on north-east side of valley. no Chusquea but numerous leafless orange-red trumpet flowers poking up out of the ground on the steep slopes. Clouded up during the night, all overcast at 5 a.m. Carol looked in caves on SW side of valley and found a ^{live} baby bat lying on the floor of one; no hummers in the caves but she saw one. Locality shall be known as
4 miles
13 km SSW Pizacoma, 13,200ft.

Dec. 5 Drove through Pizacoma to ^{Huanabambini and to} Pichupichini looking for tinco-tinco. a gorgeous elevated straight road back toward Pichupichini and a landing strip - has been abandoned, almost impassable. No tinco, neither leucodon nor peruanus. Drove to the border at Desaguadero and waited about 2 hrs. for the advance to finish lunch; a muddy garbage-stream dump. Bolivia offered a striding contract immediately. neat towns, painted pastel buildings, lots of metal roofs, and fields planted and green. Obviously earlier rain here. Gasoline + meat in abundance in Guachi. ate supper there, then camped in a field some rain while driving, and road with puddles in many places

Dec. 6 a few sprinkles at dawn. Breakfast in La Paz, then south by paved road through slight drizzle and clouds to Caracollo where we turned east toward La Paz. Lots of bunchgrass (sparse) at the plains, barely good enough to cultivate, but they try. Not many llamas + alpacas. Then over the mtns toward Cochabamba. Much more high country than I had

remembered. Some yareta (with smaller rosettes) sparse bunchgrass, cultivation up to 14,000 ft., not much grazing. Was cloudy, drizzly, or foggy most of the time. ~~We~~ Drove till after dark in search of an acceptable campsite. Ended up on a (hopefully) unused road with tent & car right in middle of the road.

Dec. 7 Clouds disappeared during the night, morning clear. At least 30 people walked through camp at various times during the night. We are on edge of steep canyon with brush, bunchgrass, pepper tree, and various farms in the distance with newly plowed fields, new corn, etc. Our elevation is ~~10,600~~ 10,600 ft.; we are at a no place called Chullpakasa, turn 62, 14.6 miles by road from Parotani (which is 8430 ft.). Took photos of farms and steep fields. Saw dead skunk and guinea pig? droppings.

In the 25 large folding Sherman set after dark last night I caught 1 Phyllotis wolffsohni.

Left about 8 (a truck wanted to get in the road to collect yareta rocks) and drove down to Parotani, then along the river toward Cochabamba. Camped 10:30 am in molle, acacia, ^{Prosopis} muña, brush, cactus, 4.9 mi by road from Parotani, 8500 ft. Call it 4 miles direct, north. Also Palo Boracho, Pyreantha. Put out 55 live traps at 3:30; Anita & Carol put out about 50 also. Hot.

Dec. 8. Rain during night, stopping about 6 am. maybe $\frac{1}{2}$ ". The dry wash by camp with lots of muddy water. My traps held 2 Phyllotis, Anita & Carol each caught a Graculus. Broke camp about 10 o'clock and drove to Cochabamba. Things looking quite green. Left Cochabamba about 6 pm and drove about 15 km along the Santa Cruz road. Camped in acacia Prosopis thorn scrub. Millions of frogs calling in the valley - full of pebbles from rain yesterday. As we sat

eating papaya at bat-flying time, an army officer, loaded by rifle barrel/peeking over a rise 20 yds away, strode into camp and wanted to see our documents!

Cloudy at 6 pm, clear by 9, clouded again in the middle of the night, then clear in the morning.

Dec 9

All day on the Sucre road. Goes into almost-all-plain country between Cochabamba and Espigara. Espigara to Sucre is mostly thorn scrub, a curious "sacacoli" of bare red earth and stones with widely scattered trees of many kinds including molle, acacia, etc. Enough rain so that everyone is plowing and planting corn (behind thorn-branch fences). Some corn here high and in a few places, especially along the Rio Grande or one of its tributaries, ready to pick. The town of Totora is charming, all tile roofs. In the absence of ^{adequate} any sort of maps of Bolivia, we bought a big wall map in Cochabamba. It turns out to be ludicrously absurdly inaccurate. A few sprinkles during the day. Camped along the river at about km 45 from Sucre in bare-ground thorn forest. Overcast. We didn't actually see many goats during the day, but lots of browse vines and absence of ground cover in spite of enough rain to raise corn.

Put out about 25 small Sherman traps at 6 pm in a dry wash with thorns, larger trees, big & skinny Cardobea cacti, and spiny ground bromeliads.

Dec. 10

Nothing in traps. Numerous flying around camp at night. Drove to Sucre then ~~west~~ toward Potosi but turned south before Potosi to Puna. South of Puna is a particularly good example of the country

being cultivated for corn and algar: the ground stoney and bare
bare here. How come enough rain for corn but nothing else grows?
Camped in an almost bare area with fields, ^{a few} cacti and a few acacia
trees ^{at} Otavi.

Dec. 11

Rain during night. Drove along valley thru Camargo etc. Flat
tire in playa of Abecia. ^{English sparrows} Stopped for the night in a broad dry
wash ~~of~~ with many nice big acacias and some bushes in
the flats and many kinds of cactus, palo verde, and various thorns
on some hillsides, other hillsides bare. Put 24 small shermans
among bushes up a dry wash, and 12 more plus 5 large shermans
on a cactus hillside. Night partly hazy. Anita & Carol put about 50 leg. sh.

Dec. 12

Hazy at 5:30 a.m. but clear by 6:00. 2 *Phyllotis* along side bushes
in the dry wash but nothing among cactus. Both Anita & Carol had
found *Oryzomys*? droppings among cactus, and good holes,
but caught nothing. Our camp is between La Caverna (a big) and
what appears to be a long up grade toward ^{Placayachi} ~~La Caverna~~ (Prov. of Tarija),
10,000 ft. Drove ^{to Placayachi} ~~to La Caverna~~ through rich cactus then bunchgrass, then
toward Villazon - La Aurora through spectacular steep stony canyons.
arrived Villazon about 3 pm, got through customs at 6. Collected
4 lizards on stony plain near 2 lakes with flamingos ^{east} ~~west~~
of Villazon. Camped on open puna about 10 miles south of La Aurora.

Dec. 13

Light rain during night. Drove to Tilsa and camped among willows,
mulle, bushes, & fields $\frac{1}{2}$ mile north of the town. Set about 50
small and large shermans along walls in the town on three separate
pieces of trap line. Some mulle trees, some willows, some bonbardy
poplars. Anita & Carol put traps along walls in the dry wash
(Gorganta del Diablo), and Peter put traps along the cemetery walls.

- Dec. 14 Considerable rain during the night; lots of water coming out of the Garganta, but almost stopped by morning. My traps had about 3 mus, 1 Rattus, and 6 Phyllotis caprimus (including a couple of Andinomys). Other lines had about 4 caprimus and/or andinomys.
Packed up soggy mess and drove to Tucuman. Camped outside of town on road to Ag. Station.
- Dec. 15 no rain. Did 8 skins + chromasomes, then drove south and camped near the summit between La Viña and La Merced. Very hot, even at night. Remaining mice died of heat. Put out about 25 large Sherman in dry thorn-scrub - quebracho forest. lots of ants. Large yellow + blue + dark jays
- Dec. 16 nothing in traps. Hot all night. no rain. Drove to Catamarca and Chumbicha. arrived Chumbicha about 1 pm. Very hot & humid. no place to stay and no enthusiasm to stay, so picked up mail and returned to Catamarca.
- Dec. 17 Catamarca. Doctor for Ali etc. Very hot.
- Dec. 18 " * Our room in hotel was 35° at midnight, about 32° outside the window.
- Dec. 19 moved to Hosteria at La Concepción, 3200 ft., ^{25 km NE Chumbicha} 37 km SSW Catamarca. Still hot.
- Dec. 20 native vegetation is thorn scrub and huge open trees. also lots of planted English walnut, olives, ~~and~~ corn, shade trees etc. about 40 traps in dry wash behind the Hosteria caught 2 mus (goats). still hot
- Dec. 21 Traps along the river and a few in thorn scrub caught one juvenile Graculus. nine steel traps and 6 museum specials in white-washed runways under thorn goat fences and containing

hystriomorph droppings caught 1 small guinea pig + a
windstorm came up during the night and cooled things off.
In morning there was a curious yellow haze all the way to
Catawara. nothing in Carol's traps. DOR Gracings & last.

Dec. 22 about 60 traps in thorn-cactus and in a grassy gully
in an olive grove caught nothing. Carol + Anita about 50
more in thorn-cactus caught nothing. To Chumbicha + back.

Dec. 23 met Mike + Lynn + wares in Chumbicha and drove to the
pass between Chumbicha and Uragan. Camped in what is
probably ecotone between chaco and monte. Lots of thorn trees,
bushes including Zarrea, cardon, and spiny-leaved ground
bromeliads. Saw tinamous and small grey fox. no people for
miles. I put traps at a small rocky outcrop, along a dry wash,
and 2.1 miles down the road toward Chumbicha at two rocky
talus slides. Anita + Carol put traps also in thorn, grass,
^{low} of spuntia, mesquite, and talus. Clear + warm.

Dec. 24 17 km NW Chumbicha, 3750 ft. The traps down the road are about
16 km NW " , 3500 ft. Camp is near km 1145. night clear calm.
Carol caught 1 Ph. darwini in rock slab with cardon + bromeliad,
Anita 1 Gracings in ground of spuntia, and I caught 1 akodon
in talus and 4 Phyllotis darwini in talus. at 6:30 put out

~~Dec. 25~~ 60 traps up the road in Zarrea, cardon, and low of spuntia (equal numbers
of MS, small Shermans, and small folding Shermans). Carol + Anita also
put out about 20 large Shermans each. This is 5 miles up the road at
4400 ft. also about 20 traps in a brushy gully 2.6 miles up the
road at 4100 ft. Carol + Anita set here also. Anita + I also had
about 20 traps each near camp, mine mostly in a talus

sled with spring bowhairs, cards and bushes. Temp. very warm. night clear.

Dec. 25 Nothing in anybody's traps. Ali has seen more tinamous. also 2? families of a half-dozen small owls. Lots of bats flying in evening, but we know of no water for miles. Still no evidence of people other than traffic on the roads.

at 6 pm Anita & I set about 150 live traps in scrub & palms about 12 kms SW Chumbicha. The palms seem to be the center of action, with ^{mouse} droppings and numerous diggings under them. Saw capeton tinamou. Temp. in Chumbicha at 5:30 was 42°.

Dec. 26 Nothing in traps, but one group in Anita's traps near camp. Drove to Andagolá for lunch with Mares and Beryl ~~Vicelmir~~ Vicelmir, then camped at the Cuesta de Zapata between Belén and Tinogasta, 1875 m. Carol & Anita put out about 50 traps.

Dec. 27 Traps caught 4 mice (2 groups + 2 ph.). Vegetation grass bushes and pink granite. Drove through Tinogasta & Fianbala, then toward Paso de San Francisco. Camped at 13,300 ft about 12 km NW Tinogasta, a pampa with stream, good altiplano. Camped in unoccupied hut. Anita put out about 25 large shermans.

Dec. 28. night clear, barely freezing. 4 Phyllotis darwini and 1 akodon ardesius? in Anita's traps. Left early and drove to Copifó, arriving about 5 p.m. From Fianbala to Piquino, (a couple of links in a salty river bottom ~~at~~ an hour or so east of Copifó), ~~at~~ a distance of 400 km ±, we saw no vehicles and only one person - a man driving a couple of loaded burros. We recognized

no permanent habitations. Saw about 4 flocks of rheas, and saw lone guanaco twice. A cordón took off from hummocky ground near the road; no food there. There is some small-island country approaching the pass from the east, but essentially nothing ~~from~~ on the west side of the pass all the way down to Copapo. Laguna Verde is salt, thermal, Taboe blue, with flamingos, ducks and phalaropes; no vegetation around it.

Camped on beach north of Caldera.

Dec. 29 Drove through autofoquia (4 hrs to get visas etc) and camped at midnight in nitrate jungle in Tarapacá north of Victoria. Only vegetation from Copapo was a "forest" of planted algarrobos? in southern Tarapacá, but we passed ^{it} ~~them~~ at night.

Dec. 30 Arrived Arica about 11 a.m. Drive shaft bearing finally gave out in downtown Arica!! Fixed by 1 p.m. and drove to Tacna to put Anita + Ali on plane. Camped at our Tillandsia study area outside Tacna. Sky almost clear, ^{breeze} wind at 7 p.m. from Tacna.

Dec. 31 Sky almost clear at 6 a.m., no dew, breeze from inland (north). Our footprints on the study area are still almost but not quite fresh. The ground here is sandy on the surface, with quartz crystals etc, but powdery underneath. Obviously wind-swept by gentle breezes. Stamping your feet stirs up dust. The powdery soil goes down at least a foot. No flowers on the Tillandsia.

Drove to Tarata and then up to Yacota camp. Brief but fierce

Pearson
1972

Jan. 1 Hailstorm at the Queñua camp (12,900 ft) at 1 p.m. Yareta
camp was on-off drizzle all afternoon, evening calm + cloudy.
about $\frac{1}{4}$ " of hail-snow during night; water with skins
of ice. Vegetation looks same as on last visit except night
the nototricho looks greener + larger. ^{windy} No hummers seen at cave.

Drove down to Queñua camp at 8:30 a.m. Ground damp,
vegetation same, a lizard still under the rock. The tallest queñuas
are 12 ft. but only a few as much as 10 ft. Windy.

Searson
1971

Species account

Abrocoma cinerea

- Sept 11 6 km NE Tarata, 12,900 ft. Large Sherman set at large opening in a rock retaining wall below road and baited with ripened rolled oats and cooked corn caught a large Abrocoma between 6 and 8 p.m. Docile in trap.
- Sept 12 Put into screen cage. Very docile, ate blossoms and leaves of ~~Thymophyllum~~ Lepidophyllum quadrangulare as soon as offered, but ignored Baccharis, Senecio, and cactus. A Phyllotis magister was caught in a trap a few feet away, and at 8 p.m. a Bolomys bealei was in the same trap; released.
- Sept. 13 Bolomys again in the trap at 6:30 a.m., removed. There was a half-cup of Abrocoma droppings on the floor of the hole in the wall (4 feet above ground). Droppings look like viscous, some with longitudinal lines.
- On our way back from the cumbre we stopped at noon at our camp at 6 km NE Tarata and there in the barest flattest least rocky part of the puna was a ^{newly} squashed Abrocoma cinerea. Between 6 and 10 vehicles had passed during the dark hours.
- Our captive continues to be completely "plastic," likes to be handled. Have tried him on a great assortment of foods but he has eaten only ~~two~~ stems + blossoms of Lepidophyllum quadrangulare and carrots. At night he makes a very soft, mellow, guinea pig-like sound.
- Sept. 25 Took him up to 12,600 and released him under Lepido quadrangulare. He ate Lepido, a tiny succulent yellow-flowered forb, a few leaves of Phyllis, and bark + a few twigs of Ephedra.
- Sept 26 ate lots of Phyllis overnight. It obviously ate only late at night (4 a.m.?)

Pearson
1971

Athrocara cinerea (cont.)

Oct-3 13km NE Tarata, 14,700 ft. Have been putting the Athrocara out to
graze: he likes the galls on Leptos. quadrangulare, leaves of
yareta from shady spots, leaves of the straight-leaved stinking
Serecio, mottled leaves of Nototrichs,

Pearson
1971

Species account
Lisaeum multiforum

- Oct 3 See journal
- Oct 4 yesterday evening compared temp. performance of a L. altheodor and 2 juv. multiforum of same size. In air in shade at 5:20 p.m., both equilibrated, both totally immobile; air 4°C.
- This morning, after burying them overnight to prevent freezing, put them out on burlap in sun at 8:09; shade 7°, burlap layer 19°, breezy. at 8:13 all 3 ran off when touched. Put them back in plastic bag in shade 8°; at 8:29 body temp 9° ran unstably and righted (both spp.). at 8:33 in shade 6° can walk, body temp 6°. multiforum opens mouth, but not altheodor. at 8:37 into sun 8:38 still sitting in spite of prodding; 8:39 dither; 8:40 dither; 8:41½ all lively, body temp 17°.
- Down the road under the rock where AK and Ali caught two and banded yesterday, at 9:50 a.m. a baby lizard ran under it; temp. under it was 6°. Looked under oodles of rocks thereabouts but nothing else. Big ones in damp places have frost under them, numerous have spiders.
- at 10:15 a big ♂ ran under big rock into shallow burrow: his temp 31°, burrow 4°, air 8° (shade). Sunny. Moen watched the 2-tailed ♂ from the rock of yesterday. Grazed on seep forbs, when cloud covered sun he ran onto flat rock.
- Oct 7 The huge ♂ from 13 km NE Tarata that Ali has tamed (in one day) and is living in the patio weighs 30g and snout-vent 98mm. Eats flies, so far we have not seen it grazing. also eats ants.
- Oct 15 Photoed the one under the small rock in the pampa at 12,900'. The Ali's captive, he has become quite tame and permitted Benson to photo at 2 feet distance. He was out with shade at 4°C.

Pearson, O.F.

1972

Journal

Calif.

Pearson
1972

Hastings Reservation
Carmel Valley, Monterey Co.

June 7

Put out museum specials on all Colham lines 3-7 pm, baited with peanut butter. Weather coolish but mostly sunny. Very few good runways in the meadow, and no mouse whitewash. Doodles of gophers.

It has been a very dry winter, vegetation short & sparse but oats still greenish, saved by a $\frac{1}{2}$ " of rain in May. The gopher enclosure in Pearson Field has much more accumulated dead vegetation than control, and somewhat more Bromus, a gopher that got in about 2 weeks ago has apparently been poisoned.

June 8

Night clear and cold, at 6 a.m. Chaparral line had 9 P. truei (none breeding) and one Neotoma. Meadow line nothing. Oaks line 1 P. truei (pregnant).

When setting out the traps I was about 16 traps short, so distributed the shortage equally over all 3 lines. Every stake has at least 2 traps, however.

Day sunny and cool. at 4 p.m. a wren-tit and a wren in the Chaparral line, nothing in the others.

This morning there was light fog on top of Haystack Hill, grass wet enough to wet shoes and pants, but not dripping wet.

June 9

Night cold, mostly clear, grass not wet. at 6 a.m. Chaparral line had 3 Truei; ^{Neotoma} meadow line 1 Neotoma and 1 Reithro, and Oaks line 1 Truei. Clouded up in afternoon and light drizzle for part of afternoon and evening.

Peavon
1972

June 10

June 10 Hastings Reservation. Clear overnight, cold, light frost along creek. at 6 a.m. Chaparral line had 1 tree ad 2 Peromyscus californicus ad 1 brown towhee, nothing in other lines.

Yesterday early morning in the field along road (with burned stump) saw 4 adult turkeys ad > 18 young about 3 weeks old.

The acorn collection garbage cans were installed in June, 1968. av. inside diameter of 2 diameters at rt. angles on each of 5 receptacles was 19.92 inches.

Nov. 3, 1968 - a total of 4 acorns, all with worms.

Nov. 3, 1969 - no acorns.

Nov. 1972 (probably 1973) - 30 acorns, 12.6g dry wt.



Pearson, O.P.

1973

catalogue

#4990 - 5089

Peru

OP Pearson
1973

Catalogue
5 mi ENE Camaná, Dept. Arequipa, 3000ft.

March 9, 1973

4990 ♀ Phyllotis darwini ^{pelvis not open} ^{vagina open. uterus wide - estrus?}
4991 ♂ " ^{testis 9mm; SV 14}
tail truncated before captured [180] x [71] x 26 x 24 40gm.

4992 ♂ " ^{testis 11mm}
210 x 108 x 25 x 23 35gm.

65 km. W. Tarma, 20ft., Dept. Tarma, Peru
March 11

4993 Scuf lizard. meat picked for S. anal.

4994 " " " " " "

4995 " " " " " "

4996 Tropidurus peruvianus " " " "

4997 Scuf lizard

4998 Tropidurus peruvianus

4999 Scuf lizard.

~~5000~~ 65 km W Tarma, 200ft., Dept. Tarma, Peru

5000 Tropidurus peruvianus

5001 " "

saved most of all of above for Sarah.

March 12

5002 ♀ abodon ^{shot at night. Vag. not open}
162 x 64 x 21 x 15 27g.

5003 ♂ " ^{shot at night}
146 x 62 x 22 x 15 19½g.

5004 ♂ Phyllotis not breeding

5005 ♂ " " "

5006 ♂ " " "

5007 ♂ " " "

OPP

1973

March 13

skull only	5008	♀	<i>Phyllotis</i>		vagina closed; uterus w scars	220 x 110 x 24 x 24	34.g.
skull only	5009	♀	"		vag. not open; uterus juv.	[170] x [83] x 23 x 23	
skull only	5010	♀	"		vag. closed; ut. w scars	222 x 111 x 24 x 25	
skull only	5011	♀	"	lots of mesenteric fat	vag. not open; ut. juv.	192 x 98 x 23 x 23	27g
skull only	5012	♀	"	fat	vag. open; ut. juv.	212 x 111 x 23 x 22	35g
skull only	5013	♀	"		vag. not open; ut. juv.	195 x 100 x 24 x 23	28g
skull only	5014	♀	"		vag. not open; ut. juv.	194 x 99 x 24 x 24	26g
skull only	5015	♂	"	belly white, tail pale	skull only ; testes 4; SV tiny	[184] x [85] x 26 x 25	36g
skull only	5016	♂	"		testis 3m; SV tiny	201 x 105 x 24 x 23	28g
skull only	5017	♂	"	belly + tail pale	flabby testes, 7; SV-6	225 x 106 x 25 x 24	50g
skull only	5018	♂	"	belly + tail pale; intest. messy	testis 4; SV tiny	225 x 119 x 25 x 26	38g
skull only	5019	♂	"	intest. messy	testis 3; SV tiny	210 x 106 x 24 x 25	30g
skull only	5020	♂	"		testis 7, flabby; SV-8	225 x 113 x 25 x 23	41g.
skull only	5021	♂	"		testis 3; SV tiny	207 x 100 x 23 x 23	35g.
skull only	5022	♂	"		testis 3; SV tiny	202 x 100 x 25 x 24	30g
skull only	5023	♂	"		testis 7, white, big fat pads; SV-6	218 x 112 x 25 x 23	35g.
skull only	5024	♂	"	belly + tail pale	testis 4; SV tiny	204 x 105 x 26 x 23	30g.
skull only	5025	♂	"		testis 4; SV tiny	202 x 96 x 24 x 23	34g.
skull only	5026	♂	"		testis 3; SV tiny	189 x 93 x 24 x 23	26g.
skull only	5027	♂	"		testis 3; SV tiny	189 x 98 x 24 x 24	24g
skull only	5028	♂	"		testis 3; SV tiny	215 x 110 x 25 x 23	32g
skull only	5029	♂	"	tail dark, pectoral streak	testis 4; SV small	243 x 120 x 28 x 26.5	46g
skull only	5030	♂	"		testis 4; SV tiny	224 x 116 x 24 x 25	38g
skull only	5031	♂	"		testis 4; SV tiny	[164] x [54] x 25 x 24	38g
skull only	5032	♂	"		testis 4; SV tiny	[210] x [103] x 24 x 23	36g.
skull only	5033	♂	"		testis 3; SV tiny	204 x 105 x 25 x 24	30g
skull only	5034	♂	"		testis 3; SV tiny	205 x 106 x 24 x 24	28g

OPP
1973

skull only	5035	♂	Phyllotis	testes 3; SV tiny	194 x 92 x 24 x 24	30g
skull only	5036	♀	"	vag. not open; uterus juv.	186 x 93 x 22 x 23	23g
skull only	5037	♀	"	vag. not open; uterus juv.	177 x 91 x 25 x 22	20g
skull only	5038	♀	"	vag. not open; uterus juv.	219 x 107 x 26 x 23	39g
skull only	5039	♀	"	vag. not open; uterus juv.	245 x 125 x 27 x 25	43g
	5040	♂	" sp.	test 6 mm, SV 5 mm	266 x 138 x 28 x 25	58g.
	5041	♂	" "	testes 4 mm	244 x 128 x 28 x 25	48g.
	5042	♂	" "	testes 4 mm	246 x 128 x 29 x 24	59g.
	5043	♀	" "	uterus juv.	224 x 115 x 18 x 24	42g.
	5044	♂	abscond	testes 4 mm	148 x 64 x 21 x 14	20g.
	5045	♂	Phyllotis darwini	fat.	204 x 103 x 24 x 24	35g.
skull only	5046	♀	" "	vag. not open. uterus juv.	184 x 93 x 22 x 24	24g.
skull only	5047	♂	" "	testes 3, SV tiny	206 x 105 x 25 x 23	31g
skull only	5048	♂	" "	testes 4, SV tiny	220 x 118 x 25 x 25	30g.

few if any of the above with scarred tails or signs of fighting.

(in east Challopalea, 4000m., Dept. Tacna, Peru)

March 17

5049 ♂ *Isoetes multiflorus* - telemetered and squashed.

March 18

5050 Bufo ✓

5051 " ✓

March 19

March 23

5052 ♂ *Isoetes*

+ proteins 5053 ♂ "

+ proteins 5054 ♂ "

+ proteins 5055 ♂ "

+ proteins 5056 ♂ "

+ proteins 5057 ♂ "

telemetered in temperature of environment on 3/18 and 19. cf. dehydration used in experiments with telemeter No. 2.

Telemetered + painted

5058 Toad *Pleurodema*

5059 Toad *mini*

5060 Toad *Pleurodema*

5061 Toad, "

5062 Toad

5063 Toad ✓

5064 " *Pleurodema*

5065 " "

5066 Toad *mini*

5067 Toad ✓

5068 Toad ✓

skull + lungs 13 km NE Tarata, 14,500ft², Dept Tarma, march 25

5069 ♂ *Phyllotis darwini*

breeding

skull + lungs 5070 ♂ " "

breeding

skull + lungs 5071 ♂ " "

breeding

skull and lungs 5072 ♀ " "

pregnant 1 + 1 emb

skull + lungs 65 km E Tarma, caught march 13, killed march 25

5073 ♂ *Phyllotis darwini*

captured same march 13 at alt.

skull and lungs 5074 ♂ " "

Testes 1.6 cm, SV little
captured same march 13 at alt.
non-breeding ♂

Cafrazo, 13,500ft, Dept. of Puno, Peru, march 25

5075 3 Toads (*mini*)

"in town square" of Cafrazo

1 mi. E. Challapalea, 13,200ft, Dept Tarma, Peru
march 25

5076 Toad ✓

used in temp. test on 3/24 and 3/25

5077 *Liolaemus*

" " " " " " " "

5078 Toad ✓

5079 Toad

5080 " *mini*

5081 ~~Toad~~ *Pleurodema*

5082 " *mini*

5083 " *mini*

5084 " "

5085 " "

5086 " *Pleurodema*

5087 " (*Septo*)

13 km NE Tarata, 14200ft, Dept Tacna, Peru

March 25, 1973

5088 "

5089 *Zielaemus moczfordi*

The individual used for temperature integration. Died in Berkeley 4/3/73.

Pearson, O. P.

1973

Journal

Peru

Pearson
1973

Tillandsia study area, Dept. Lima, Peru

March 7

Tillandsia Garden #

on ridge

I

~~base on coast~~

dry bulb 85°; wet bulb 75°

dry, bright, sunny

for coast

H

with
seed
pods

G

F

E

D

B

with orange rattle seeds
C flower

A = 4 new side sprouts, + big center shoot
quite dry. Lots of dead mat. ~~470 gr.~~ (460)

B: 3 heads ± 8 rows dead leaves, old dried flower
head. ~~475 gr.~~ (475)

asked

ink, skull top

C: orange flower head; single. ~~320~~ (305)

D: big double head; old dried flower stalk
about 9 rows dead leaves. 480 gr.

E: 2 heads, lotsa dead leaves. 335 gr.

F: little single; 3 rows dead leaves 60 gr.

G: Big single; 2 new little center shoots. 1 centil
green seed stalk. ~~370 + 110 = 4~~

250 + 265 = 515 gr

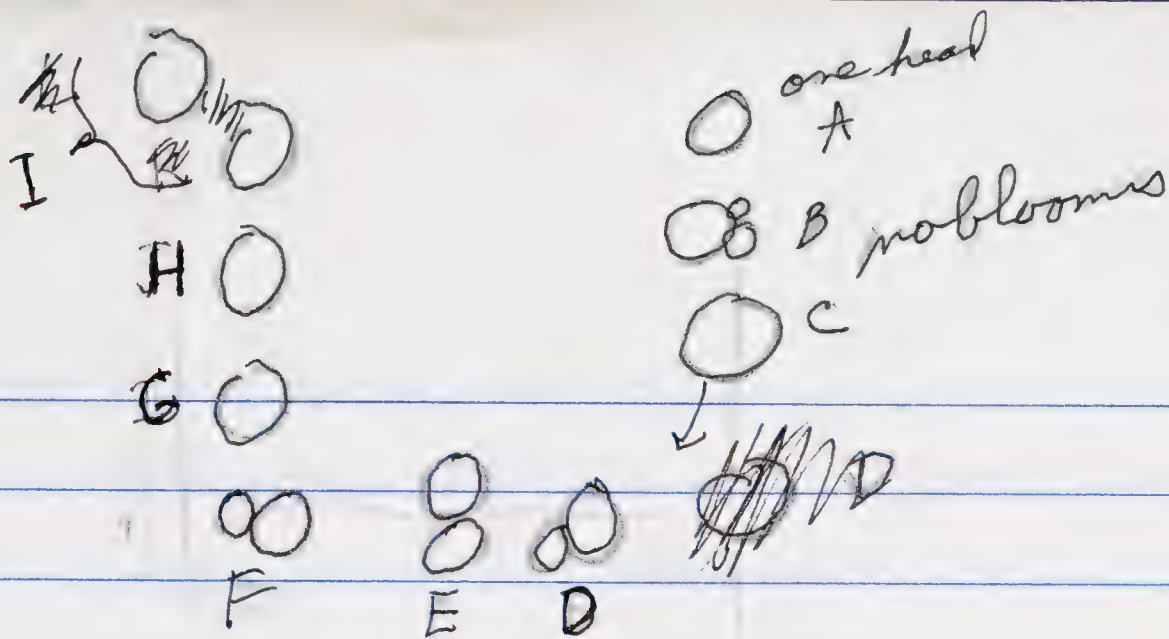
~~265 235~~

H: 2 small heads: lotsa dead: 120 gr.

I: 2 heads with dried seed pod; lotsa dead ~~120 340~~ ^{155 385} 510

1973

Garden #
hillside



A - 160g, \pm 12 layers dead.

B - 2 big heads, one little 355
dying side head. 225 } 580

Lotsa dead.

C - single head, 405 grams. \pm 11 rows dead.

D - two heads, old dried seed pod : 405

E - two large heads 280
245 } 525

F - two heads, lotsa dead. 350 g

G - single, \pm 12 rows dead : 375 g.

H - single, 9 rows dead 210 g.

I - widely separated double. 345
lotsa dead 270 } 615

The Tillandsia ^{study} area in general was quite dry. numerous tracks of Burlemus, a few mouse tracks, saw one lizard. ants saw a big orb-weaving spider. Dave found some "young" Tillandsia plants, especially a couple in cracks in rocks, with "roots". Perhaps the seeds blow into these cracks, and these are the places where seedlings get started. If so, Sandy hills with Tillandsia on the sides should have rocks above somewhere.

Drove south and camped after dark about 10 mi. S. Sea. no vegetation. Two foxes on edge of camp during night.

1973

and heard barred owls and bats.

March 8 Drove south. Many of the lowas are green, and the one at Atiquipa looked like rolling hills of Ireland; some grasses, some forbs, blooming *Grindelia*. Camped at dusk 5 mi. ENE Canana, Dept. Arequipa, about 2,000 ft. Good lowa vegetation, an 8" timothy-like grass in bunches plus woody "aninals?", oaks, a very few low cacti. Heard barred owl and bats during night.

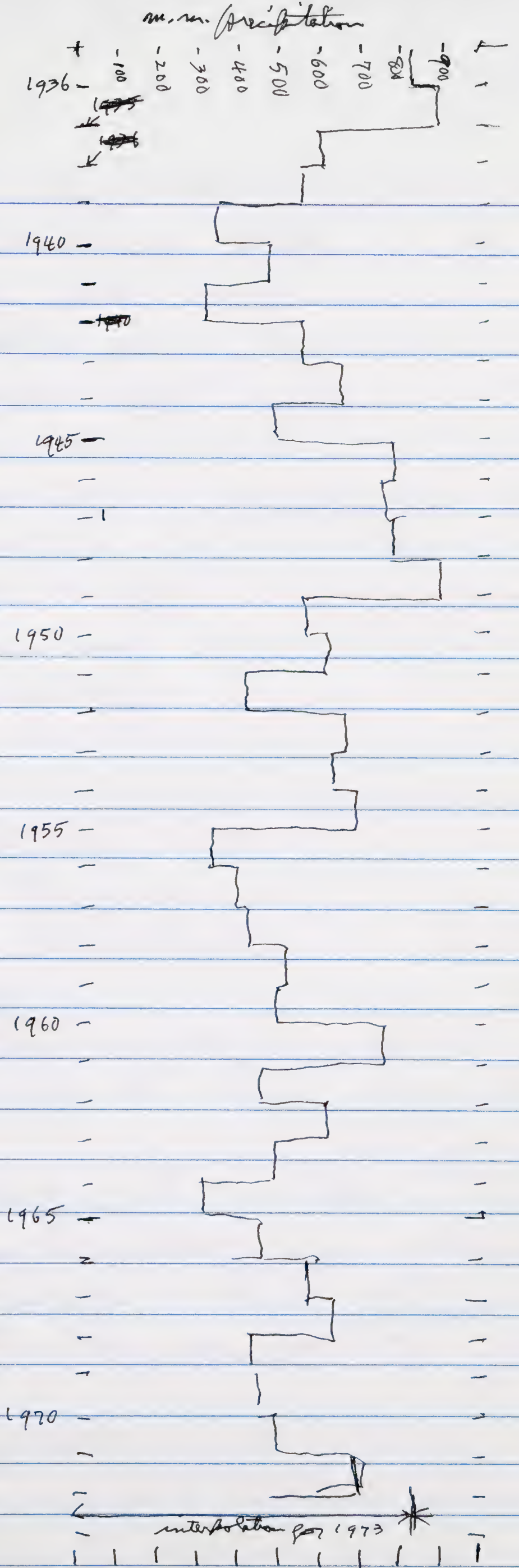
March 9 Saw a mouse run into a hole at dawn. Dug him out with first or second shovelful; a very light reddish soil. a *Phyllotis darwini*, breeding male. Numerous other burrows nearby, some of them quite large as though made by something else (*Dipodomys*?), and with runways emanating from them, cuttings, mouse droppings, and footprints in front of them. Dug out two more *darwini* easily. Some others too deep and too big. Saw snipe, lots of furcariids.

Drove south, through Moquegua. All rivers with lots of muddy water. Miles of green lowa between Moquegua and Tarma, also miles of dried up lowa vegetation. Arrived Tarma 4 pm.

March 10 new radiator etc. in Tarma. anti-freeze at the Ford agency. The big box of equipment went into the living-bedroom of the manager of a parking lot on Calle Deustoa about 2 blocks north of the main drag. The truck will be parked in that lot also when we return. Left about 9:30 for the coast.

Our old lowa study site is much drier than when we were here before in October?, 1971. The *Grindelia* bushes

rainfall for 37 years at Santa. Trust from El Comercio, Lima, 9 March, 1973, p. 3. Staffed article
 by Eduardo Andujar. He interprets it as revealing 3 "Cycles Peruvian" (1948-1949, 1960-61, 1973



are the only real greenery on the study area and around the campsite. The bushes up near the top of the ridge appear to be green and the vines of cucumber vines are green up near the top of the ridge but not down low.

Hunted hawks for Savich, both around camp and down at the ocean. Both species abundant. The Tropidurus peruvianus around camp were wild about watermelon, and ate the pulp and seeds avidly. many turkey vultures, a few condors up on the cliff, several (5 or more) burrowing owls cavorting around camp. 13 condors on cliff at dusk. Saw 1 vulture, 1 other small bird.

On the sandy desert there are numerous still green clumps of grass, but all the annual herbs are dried up. never more than 8 inches from tracks - lizard or mouse or both. Anita saved up some mice around a huge boulder in the sandy part, and we caught 4 of them (P. darwini).

On our cobbled grid area the only green is Grisebilia, with a few of them blooming. All the herbs and grass dry.

Just before dark I put out 26 small shermans baited with whole corn on the old study grid among the cobbles. I have Bradford put out a line of 12 traps, mostly below the road. Anita put out 20 large shermans. ^(big shermans) night clear, lots of stars.

March 12 Moon half full, set about midnight. Shortly after midnight Anita became aware of mice running around

sleeping bags, and Dave was already fighting a pitched battle with them. We all got up and swooped around with flashlights. The waterston rinds, coulters rinds, and stale bread thrown out in front of the tent were swarming with Phyllotis. a dozen could be seen in an area of 400 ft² with one sweep of the flashlight. many of them were fearless and would continue eating only 6 ft. from an observer. They shared food and did not squabble. no squeaking. Walking up and down the road and roundabout revealed fewer mice than near camp, but still lots. Went back to bed about 1:30, but mice still scampered occasionally over my sleeping bag. While footsighting saw 3 abodon, shot 2 of them. also thought I saw 2 mice, but they were much scarier than the Phyllotis and the abodon. Dave tried to defend himself by setting 13 large Sherman around his bed. When a mouse got caught in one, he would throw it down over the foot of his sleeping bag and set another one. In the morning, there were 7 full traps around his bed and 7 at the foot of his bed!!

My 26 traps had 11 Phyllotis and 2 marumasa, Anita's 20 traps had 11 mice, and Dave's 12 traps had 12 mice. Saved all of them. 4 of them are embalmers for lung tissue. one of the 4 looked like a magister with pectoral brown and dark tail and coarse fur. Not counting Dave's bed line, 58 traps, 34 Phyllotis, 2 marumasa, 1 abodon.

Dave climbed up to the Condor cliff, leaving camp before daybreak. Saw and heard lots of mice on his way up to the cliffs.

at about 6:30 am I did a slow walk down our grid and back looking for birds, (plus a detour to the cañal above camp). The bird scene is dominated by the groups of rip burrowing owls. Saw 2 or 3 wrens and about 4 Phrygilus cloudinus, nothing else.

Both Dave & I in the middle of the night heard a burrowing owl coming overhead and while trying to see him saw a faint flash of light! apparently excavating from the owl.

We all agree that the mouse invasion didn't start until after the moon went down (about midnight).

Drove to Tacna for shopping, then to Tarata. a little water in the river at Rock Camp (10,000 ft.), and a little green on the hillsides. Arrived at acacia camp (11,500 ft.) (mountain scrub) at dusk, cloudy, but cleared during the night.

March 12 Mountain Scrub. Lots of dew, no frost. Clear. The campsite is a green carpet, damp or soggy. Lots of green bushes and flowers. Cantua bushes not flowering, and greenthorns not blooming. Saw a "flock" of 6 Patagona chasing each other, walked over part of grid and saw porcupine on ground, Geothlypis cane-bill, ashens, orange-backed thrush. Zonotrichia ~~saturata~~ ^{singing} ~~not heard~~. Quite a bit of grass and lamnuclover on grid. Tallest cacti are 8 ft; no cactus blooms. Numerous puffballs up to 1 inch diam. Lots of yellow-flowered daisy bushes, surely

Grudelia. Saw no lizards. Reservoir empty, hardly any flow in the acequia.

Skinned mice. There seems to be a big coarse, dark-tailed form as well as Pli-larvini. One of the dark ones was the only one to slip his tail whilst was killing them.

The mountain scrub area has lupine. Saw one alticola and Dove saw owl. Have seen only one or two doves.

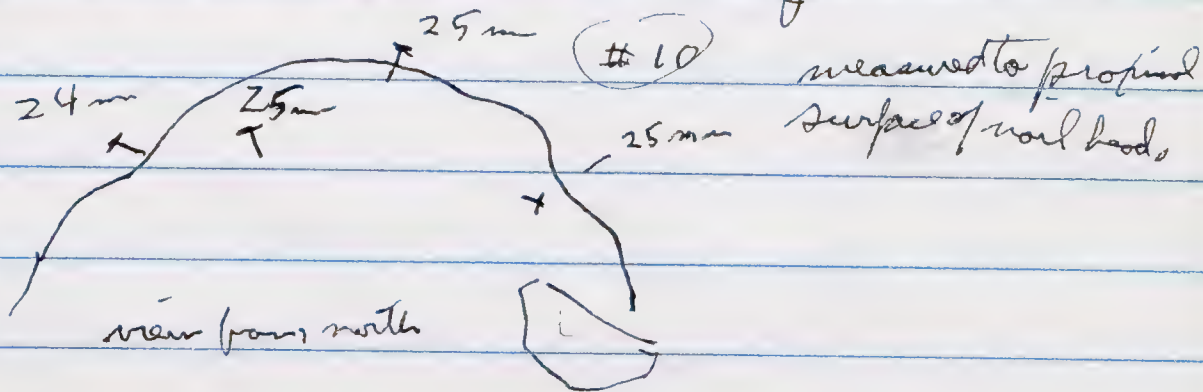
March 13

Night mostly cloudy, but clear at 5:30 a.m. minimum 40°. Yesterday's high was 70 but felt much better. Have seen no more Patagona, so essentially they are not here at this season. Skinning etc. Clouded up about 4 p.m. night mostly cloudy but cleared about 4 a.m.

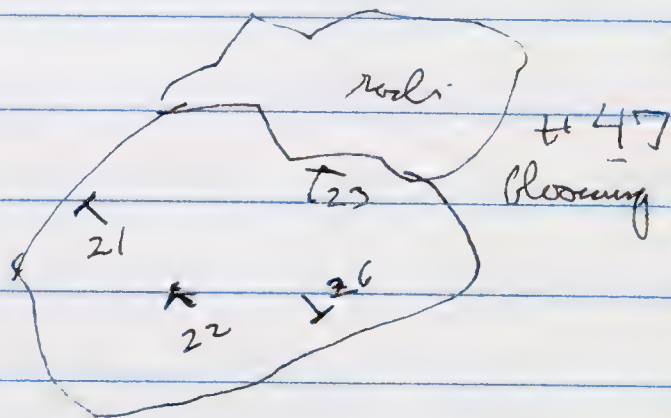
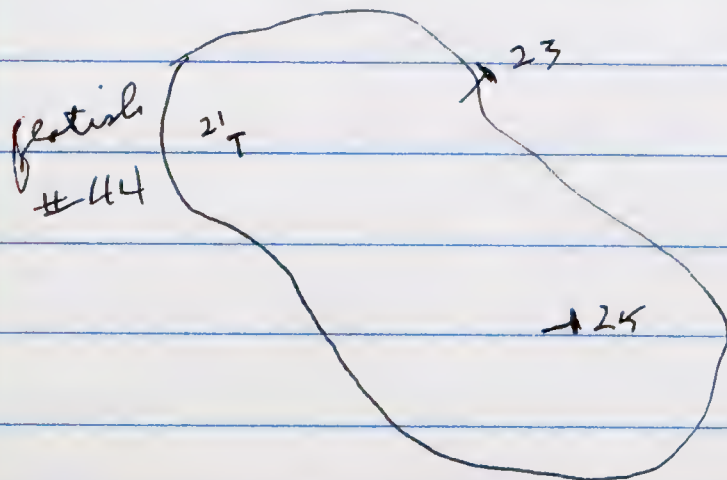
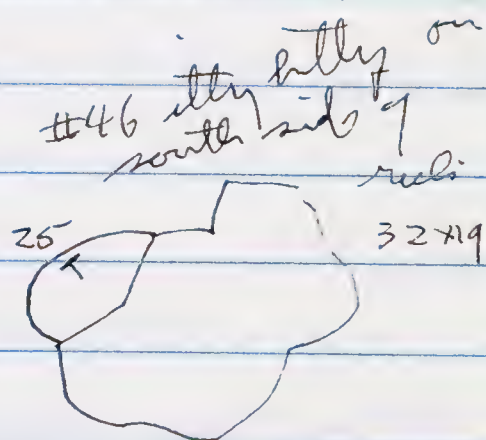
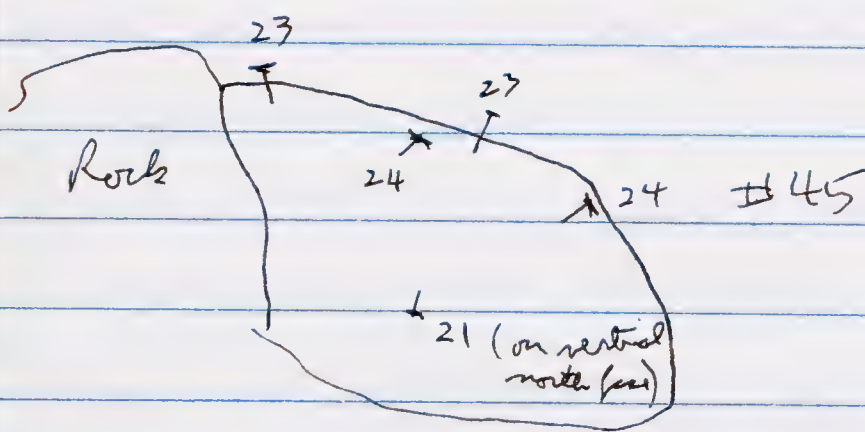
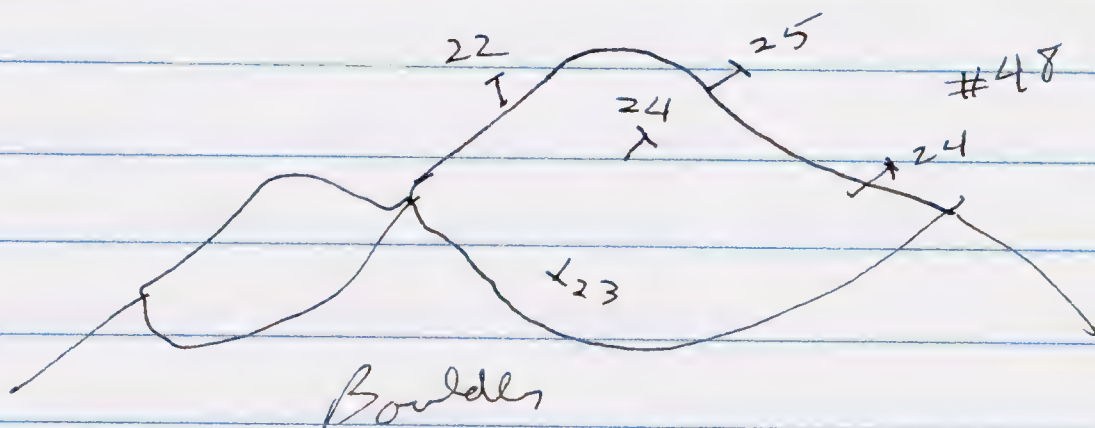
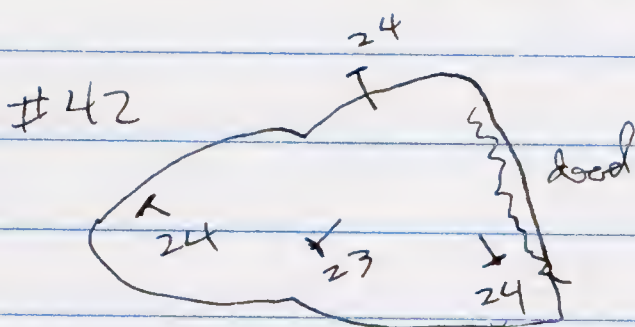
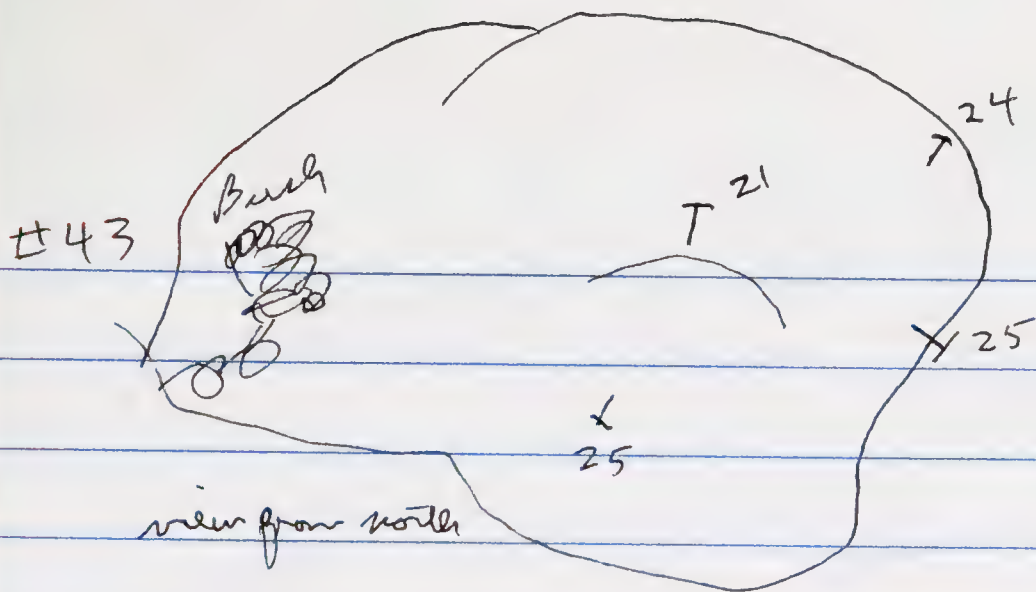
March 14

minimum 40°. Morning cloudless, no frogs or toads calling last night. Only a few Cantua blanensis, a few matshura. Chiron berlepsi active among the Grudelia during a.m. Drove up the hill at 9:30. Stopped briefly at Quena camp, then to Yareta camp. Sunny. Vegetation just as we left it except numerous Nototricha blooming. Jibacuma multiformis & alticola both out.

Carol's yareta: at A1 head with metal tag #10:



Pearson
1973



but no rain, Went jacklighting for toads after dark but saw none. Set 22 small Sherman around corals + red walls at about 4 p.m., corn bait.

March 15 Night mostly clear, a.m. completely clear, minimum 25° , light frost.

max-min. readings 3/14

3/15

5:30 p.m. - 49° 92°

5:45 " 47

6:30 45

6:40 47

7:00 - 45° $\frac{1}{4}$ cloudy 27°

7:30 - 42° (wet bulb)

7:30 - 42° ($\frac{1}{3}$ cloudy) $5\frac{1}{2}$

8:30 - 38° $\frac{1}{4}$ cloudy $3\frac{1}{2}$

11:10 - 32° clear

3 a.m. - 28° - 2

5:15 - 30° - 1

minimum 25°

6:05 - 30°

6:25 - 30° (wet bulb 24°)

6:55 - 33° clear 12

7:20 - 38° clear $3\frac{1}{2}$

8:55 - 46° clear 8

9:40 - 52° clear 110

10:20 - 60° 15

11:00 - 60°

11:00 - dry 60° wet bulb 47°

12:05 - 64° 18°

12:25 - 66° $\frac{3}{4}$ cloudy 19

12:45 - 66° $\frac{3}{4}$ cloudy 11

1:10 - 62° $\frac{4}{5}$ cloudy, sprinkle 11

1:40 - 58° $\frac{4}{5}$ " " $14\frac{1}{2}$

3:00 - all cloudy, dry, hail.

3:50 44° sprinkle 11 hail.

4:40 41° " 5°

5:10 - 38° rain $3\frac{1}{2}$

5:40 - 37° rain, 3

6:20 - 37° raining 3

Fixed up telemeters, watched toads & lizards. ~~Saw~~ Toads were wandering out in the open at noon with warm body temps. almost all we found were small ones, about 1 to 2 inches long.

For example, at 10:25 sunny and windy:

(1) yellow-footed mini-toad at 22.8° body temp; dry bulb 17° , wet bulb 45° .

It was hopping across tuft-grass - *Pyrophyllum*.

(2) Bufo about 2", hopping out in open, Body temp. 18.5° .

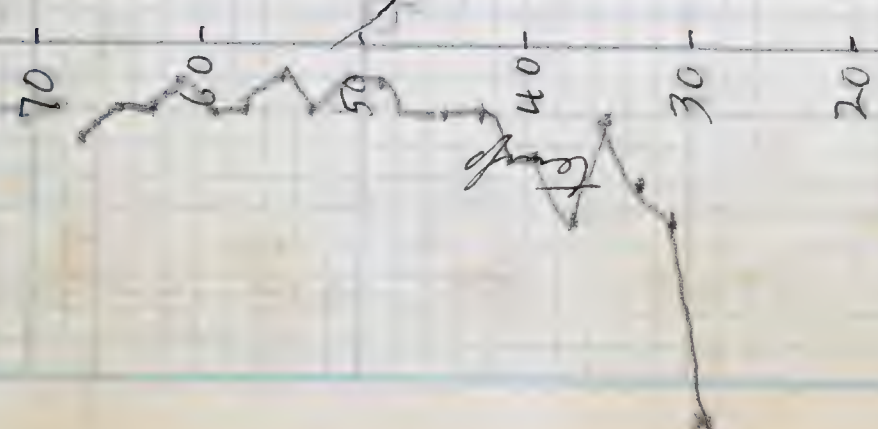
(3) 1" yellow-footed mini toad 28° Hopping about 1 ft from hideabob rock, heading bee-line ~~for~~ rock (coral rock).

(4) 1" toad under rock. 15°

Lizards seemed to be above ground at quite intervals.

My 22 traps caught 2 *Akodon berlepschi* and 1 toad. Went out after supper (almost full moon) and saw several frogs hopping cross country with a 5° , their body about 8° .

for



Temp - 10 - 20 - 30 - 40 - 50 - 60 - 70



Challapaleo, 4000m.
3/14-3/15, 1973

March 16 night overcast at first (falling rain), then mostly clear. Frost, plus ice on water bucket outside.

Calibration of telesters with *Schulleria*; in no. of seeds for 40 chicks.

#1 - 36.2° - 8.1 sec., 27.3° - 12.9 sec, 17.6° - 21.65 sec, 8.6° - 35.3, 6.3° - 42.1
cut out
at about 5° .

#2 35.7° - 14.0 sec. 27.2° - 21.5 sec 17.4° - 36.1 8.9° - 58.0 4.6° - 76.4 0° - 102.4

#3 (German) 35.3° - 7.17, 26.9° - 14.4, 17.2° - 32.75

Ran some sun - shade tests of a toad with transmitter fed by mouth (easy). Then put him under a big toad - boulder with "runways" under it and monitored him all day. He never came out, and so finally at 7:30 we tired of the game and retrieved him (and the radio). Also put a radio under a nearby boulder and monitored its temp. A toad watched a small toad come out and bask.

Brief rain about middle of day, followed by west wind and scattered clouds.

March 17 morning clear, Pan lizard - toad confusion. See my and Dave's species accounts. Basically the lizard went into the sun and stayed there, making only occasional forays into the shade to explore or try to escape + definitely not thermoregulating by a simple in-out movement. The toad floundered around, some sun, some shade, and ended up in the shade. afternoon windy from west, no rain, Dave hunted upstream and collected a toad and 2 breeding ♂ wisconsin.

Deaton



x
Lizard-toad study area

1 mi. E Challa Palca, ^{4,000 m} ~~th~~

↑
burrow in *Pycnophyllum*

Photo April 10, 1974 sic.

assorted temperatures, to be placed together with others in species accounts to give more complete daily cycle: 1 mi. E. Challofalea.

3/15

7:50 - 38° thin overcast

8:50 - 32°

9:45 - 33°

3/16 → 11:35 - 34° overcast

1:00 - 28° clear

3:30 - 28° clear

4:40 - 29° clear

5:10 - 30° partly cloudy

6:00 - 28° 1/5 cloudy

minimum overnight 27°

6:50 - 32° 1/5 cloudy

7:30 - 37°

11:30 - 52° cloudy bright

12:15 - 50° rainy

12:45 - 49° 2/3 cloudy

2:05 - 53° cloudy

3:35 - 50° mostly clear

4:20 - 48° windy mostly clear

5:25 - 44° " " "

6:05 - 39° wind dropping, mostly clear
maximum was 55

3/17

12:30 a.m. - 29° light overcast

5:30 a.m. - 24° clear, frost - 42°
minimum was 22°

6:40 27-29 (two sides of mop - mid) clear

7:10 29-31 clear

7:30 clear

8:00 AM 34-36 clear

8:30 40-40 clear

9:00 44-46 " very little wind

9:30 48-48 " " "

10:00 47-46 clear

10:30 48-48 " "

11:10 52-51 1/2 cloudy

12:00 54-54 4/5 clouds

12:40 57-59 " " 14 2

1:00 57-57 " " 14

1:50 58 3/4 clouds 14 1/2

2:00 54-55 " " 13

2:30 53-54 " " 12

3:00 52-53 " " 11 1/2

3:30 50-52 " " "

4:00 48-50 " " 9 1/2

→ 4:50 - 45° 7° windy, all clouded.

5:30 - 42 1/2 " " "

6:10 - 42 some wind, 4/5 cloudy

7:00 - 40-42 5 all cloudy

8:00 - 39-41 1/2 cloudy

8:30 - 40-41 1/2 " "

mop for day 60°

3/18

1:30 - 30-34 cloudy

5:20 - 30 all cloudy, no frost,

6:47 AM 32 1/2 clear but light ice on bucket.

minimum 24

10:50 54° 12

9:00 am 52-54 12

10:10

1:35 - 59° mostly cloudy

1:55 - 56° windy

2:30 - 58° windy 14 1/2

4:20 - 48° double windy 9

5:15 - 47°

5:50 44° cloudy, some wind. 6 1/2

8:00 = 35° slightly overcast

2:45 - 37° cloudy

3/19 AM

4:00 - 34° cloudy calmer

4:10 - 37° dry bulb, 37° wet bulb

no wind.

5:30 - 33° cloudy no wind

no dew no ice

6:15 - 35° 3/4 cloudy calmer

6:55 - 37° all cloudy

7:50 - 43° cloudy

8:00 - 43-44 " "

8:10 - 44 " 6 1/2

8:30 - 47° " "

8:55 - 50 " "

9:25 - 52° " "

see lizard note

10:43 - wet-dry 56-46°

11:00 - 52°

11:40 - 50-52 sprinkles

cloudy

3/19 PM

12:40 64° sunny
1:15 57° overcast
1:25 54 hail-sprinkles
1:35 41½° cloudy
1:50 48° wind shifted to west
3:55 44-46 cloudy, has been drizzling
4:15 43-45° "
6:00 40-42½ rain
7:30 36-39° "
~~8:30~~
10:30 33° snowing lightly, mist,
½ inch snow on ground

3/20

4:00 33° overcast
5:55 3° cloudy
6:35 3½° cloudy
6:30 34-36
7:00 36
7:50 39° cold east wind, cloudy
8:00 40° " " " "
8:22 43° " " " "
last minimum 36°
8:45 46° " " " "
9:25 46° " " " "
10:20 55° cloudy, patches of sun, little wind.
11:30 58° sunny but a cold wind from S, many clouds.
12:00 57° " " " "
1:25 48° cloudy, off and on rain
5:55 57° cloudy

3/21

6:30 am 25-27° Clear. sun just struck camp.

in corral 2 x 3 ft. with sun
and shade available

March 17

	8:38 TA 4.5° 2.9°		5.8° C
	8:44 <u>Toad (transmitter #2)</u>		<u>Lizard (transmitter no. 1)</u>
	8:44 11.9° 1/2 sun, dropping in		14.5° sun 23.8°
	8:50 full sun		sun
	8:51 into shade and dropping in 8.9°		sun fully active
	8:52 shade		sun 27.9°
	8:53 1/2 shade		sun
	8:53 1/2 sun 8.6°		sun
	8:54 1/2 into shade 9.3°		28.7° wandering sun & shade.
	8:57 into sun		then sun 29.7°, 30°
TA 8.0	Dave got roosting on toad - 10.5°		
	9:00 1/2 sun		sun 32.6°
	9:00 1/2 into sun		into shade
	9:01 1/2 1/2 sun, then shade		sun 32.6°
	9:03 shade 14.5°		sun
	9:03 sun		sun
	9:04 4 1/2 1/2 sun 14.6°		sun
	9:04 3/4 shade		sun
	9:06 shade		31.2°, 30.9°, 30.6°
	9:08 into sun 13°		sun & shade moving.
	9:09 sun		sun 29.0°
	9:10 TA 8.1° sun		sun 28.3°
	9:12 entered shade. Reading 15.9°		sun Dave reading
	9:13 into sun again 15.9° 16.3°		mostly sun & explores
	9:14 1/2 sun still		sun 28.2°, 27.7°, 27.2°
	9:14:45 into shade toad		sun
	9:20 not dry 48° - 40° 14.6° - 16.3°		{ 28.8°, 29.0°
	toad was wandering,		lizard mostly sun
	9:20 1/2 shade 15.2°		exploring
	9:22 into sun 12.1°		
	9:23 into shade		sun 28.5°, 28.0°
	9:25 still shade 10.7°		still sun
	9:26 1/2 " " 10.3°		" "
TA 9.8	9:28 into sun		still sun 27.9°
	9:29 into 1/2 shade then sun, sun		sun
	9:30 sun 12.8°		sun
	9:31 into 1/2 shade 14.2°		sun
	9:33 moves to 3/4 shade 15.8°		still sun
	9:34 still 3/4 shade		" " Dave reading 28.8°
	9:35 toad into full shade 14.4°		sun
	not hot 40° dry 53° 9:37 11.6°		9:38 { 29.6° - 31.2°
	{		mostly sun but some
	9:41 1/2 all shade 9.3°, 8.8°, 8.2°		exploring in shade.
	stay with a few whiskey clucks		sun
	9:44 still shade		full sun 31.6°, 32.4°
	9:45 " " 7.1°, 6.9°		" "
	9:46 1/2 " " Dave left toad		sun Dave Reading 32.6°
	9:49 " " "		sun 33.4°, 33.0°
	9:50 " " 5.9°		sun 32.6°
TA	12.2° still in shade 0.4°		

ToadLizard

9:52 still shade (bare new reading) 5.8°

9:55 " " 5.5°
soil surface 0.2 rise!

9:59 " " 5.4°

10:01 $\frac{1}{2}$ " "

TA 13.7° wet soil in shade 0.6 to 2.6°

10:07 still shade 5.3°

10:09 " "

10:15 " " 5.6°

10:16 " "

TA 17.0 10:19 $\frac{1}{2}$ 5.8° soil shade 4.6°
10:21 $\frac{1}{2}$ 5.8° soil in sun 22.4°

10:24 dry bulb 56° wet bulb 44°

10:27 6.3°

10:30 tad weighs 18.1 g

sun

"

"

"

escaped
+ recaptured

sun

moving!

$\frac{1}{2}$ in sun, then full sun 31.7°

into shade for 20 sec 31.8° 32.0°

escaped + bled while being
recaptured,

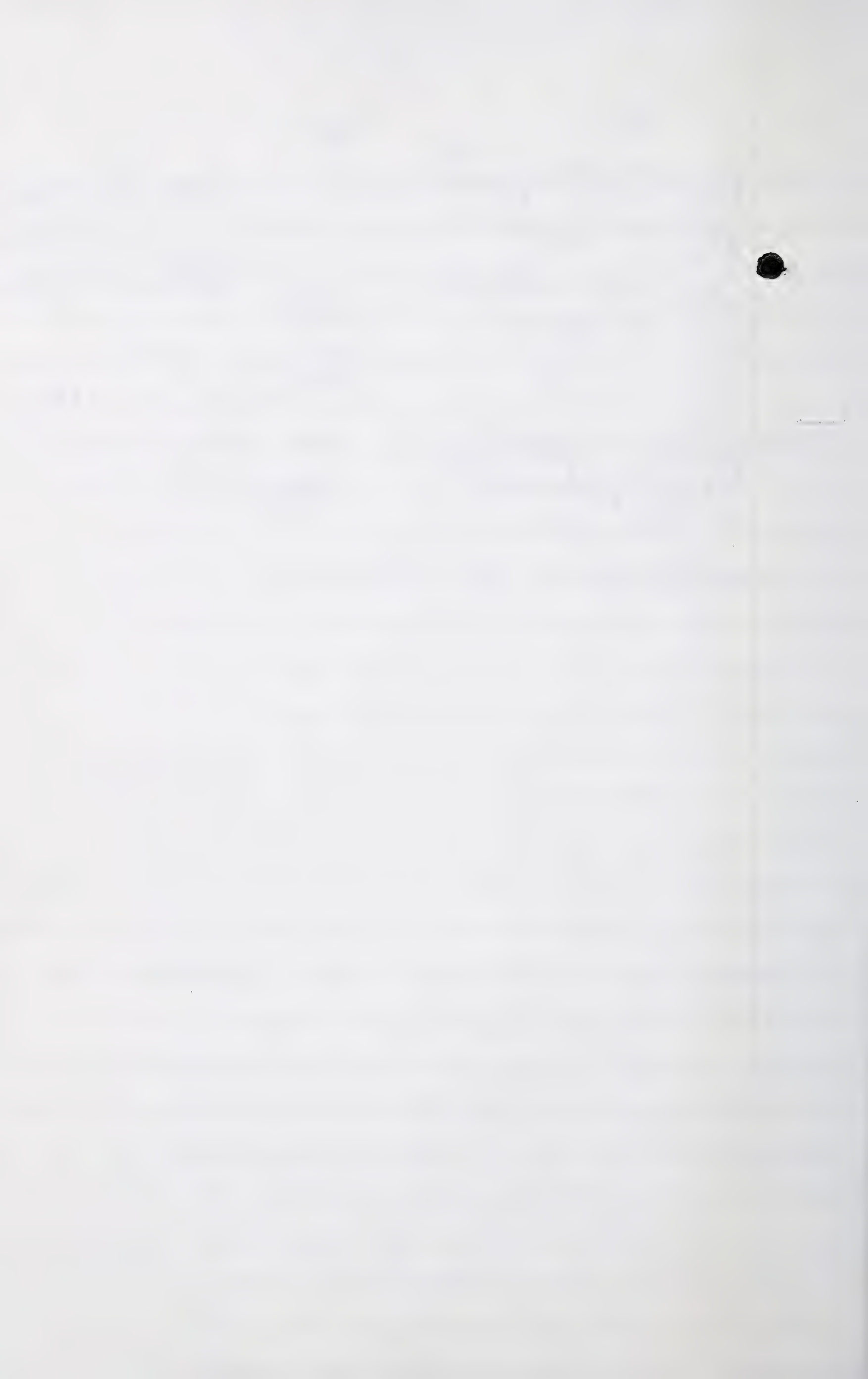
basically the lizard
stays in the sun, then
runs into the shade

comes for maybe 10 sec
to try to escape, not
deliberately thermoregulating

28.2° , 28.5°

32.6°

good full sun in above observations.



he went in, (8:30) his rectal temp. was 4.0° , air 2" above ground 7.5° , soil surface 8.2° , a nearby *Festuca* clump 6° . During the 50-minute observation period, there was little or no wind, it was cloudy, $6\frac{1}{2}^{\circ}$ ambient temp, soil surface (near board) 5° , dry bulb - wet bulb 35° - 43° . Dry enough so that in spite of cloud could striking a wool scarf elicited static sparks.

March 18

Complete overcast at 5:30 a.m., skin of ice on bucket. Birds are very scarce at this camp. The only common ones are miners. Occasionally an *asthenes* or some *men-tib*. a few flocks of parakeets fly up the stream (or down), yesterday chased by a falcon (unsuccessful). We hear seed sniffs and *Tinamotis*, have seen only one pair of doves, no butors or condors. We occasionally see *Bolomys berlepschi*, and *Ctenomys* is present but unobtrusive. To the bird list add a little grey finch and along the stream *Cinclus*.

Lepidophyllum rigidum? is the most abundant, and neither it nor *L. quadrangulatum* is in bloom. *Festuca* slightly more abundant than *Lepidophyllum*.

Ants saw one *Lichasmus alticola* two days ago

During morning ran a sun-shade comparison of ~~lizards~~ lizards. Drove 10 minutes up the road to Capazo and saw a trio of *Tinamotis* and collected 2 guinea pigs for skeletons. The guinea pigs were grazing on green turf (about 6 of them) a few feet from a road wall, together with at least 5 *amblyomys boliviensis*.

March 19

Calibration of telemeter # 4: 14.0° ^{14d} and 14.1 and 14.1 for 40 counts at 9.1°C . / 9.5 , 9.7 , 9.7 , 9.6 , 9.7 temp. 15.9° / 7.6 , 7.5 , 7.6 , 7.6 temp. 20.3° / 5.9 , 5.9 , 5.9 , 6.0 temp. 25.0° .

Put telemeter # 4 under our standard rock at 4:20 following a cloudy rainy afternoon, 40 clicks ^{12.0} 11.7 sec at 4:27.

ambient 7.9° 5:40 PM 12.2 mm/40 dls, 8:30 13.5/40, 10:30
 14.9/40 dls, 4:00 17.5/40, 5:55 17.7/40, 7:10 18.1/40, 7:55 18.1/40, 8:25 18.0/40, 9:00-17.7, 9:45-17.5, 1:52-13.3,
 2:10 raining, 11.6/40, 2:56-raining 12.0/40, 4:46 raining, 13.5/40

3/20

yesterday afternoon became rainy, and on into the evening. At 10:30 PM
 there was a 1/2 inch of snow on everything, but more rain in the
 night removed all of it. Morning ~~with~~ completely overcast, cool
 east wind. Moved lizard and implanted telemeter. Rest of day
 (until cold rain etc.) watching him.

Temperatures etc.	Rock	Lizard	ambient
7:05	14.1/14.1°	27.5/27.5°	4.2
7:26	14.4/40 dls	28.0/28.0°	5.2 overcast
9:00	15.0/15.0°	28.3/28.3°	4.8
9:30	15.7/15.7°	29.0/29.0°	38° thin overcast
11:35	16.5/16.5°	29.7/29.7°	36° 1/3 clear

3/21

1:40 AM	17.4/17.4°	31.0/31.0°	32° 2/3 clear, frost
3:30	18.0/18.0°	31.5/31.5°	30 all clear
5:30	19.4/19.4°	33.0/33.0°	27-29 all clear
6:05	19.7/19.7°	33.2/33.2°	28° minimum 27° all clear
6:30		33.6/33.6°	clear
6:45		33.5/33.5°	"
6:50	19.7/19.7°		

3/22

12:15 AM	17.5/17.5°	38.2/38.2°	33° clear calm
3:20	19.1/19.1°	39.0/39.0°	30° " "
5:40	20.2/20.2°	39.4/39.4°	28° " " (minimum)

frost, ice, some hail remaining in lee of Festuca on dead
 Festuca culms such as the lizard basking pool.

6:20	20.6/20.6°	39.3/39.3°	29° still frost
6:26	sun arrives		
6:56		40.0/40.0°	

Scorched for Toads & lizards at the seep in a cold drizzle. Found one huge lizard under a flat rock together with a medium toad-frog, plus a tiny toad of a species other than the yellow-foot kind, and one other medium toad-frog.

aunts put out 25 small Shermans and I put out 22 large Shermans. Evening calm and clear.

March 25 13 hrs NE Tarata. Numerous trucks during night. One stopped and fired a shot. My traps caught one Phyllotis darwini and aunts caught 3 Abodon ardium and 4 Phyllotis. Minimum temp overnight 27° . Morning clear, calm. Lots of Tinamotis calling. Dave shot one. He also saw hummer in the cave, looked like it was feeding young. Light rain in afternoon. Evening calm, partly overcast, then scattered clouds, then clear. Very young nursing viscacha.

March 26 minimum about 32° . Frost. Numerous thin clouds. During the night when the truck convoy went through, heard a shot. Ditto night before last.

Went down to the seep at 6:45 a.m. to temperature-integrate a lizard. Found a big one, implanted an integrator, then watched him through a cold windy morning. He finally submerged in a hail-rain sprinkle.

Dave checked the hummer nest and it contains 1 young. Evening cloudy. Dave left on a truck about midnight.

March 27 morning quite cloudy. For minium see lizard notes. Packed up and went down to the seep to look for our traps - integrated lizard. Found him just about as he was emerging, $7 \frac{1}{2}^{\circ}$. Waxed some more Lobos for Al Bennett, then drove down the hill to

acacia Camp (11,500') for rest and relaxation, a few Quercus trees were in bloom with long pendulous flowering stalks. as you come down the Quercus gives out just about where the columnar cactus begins.

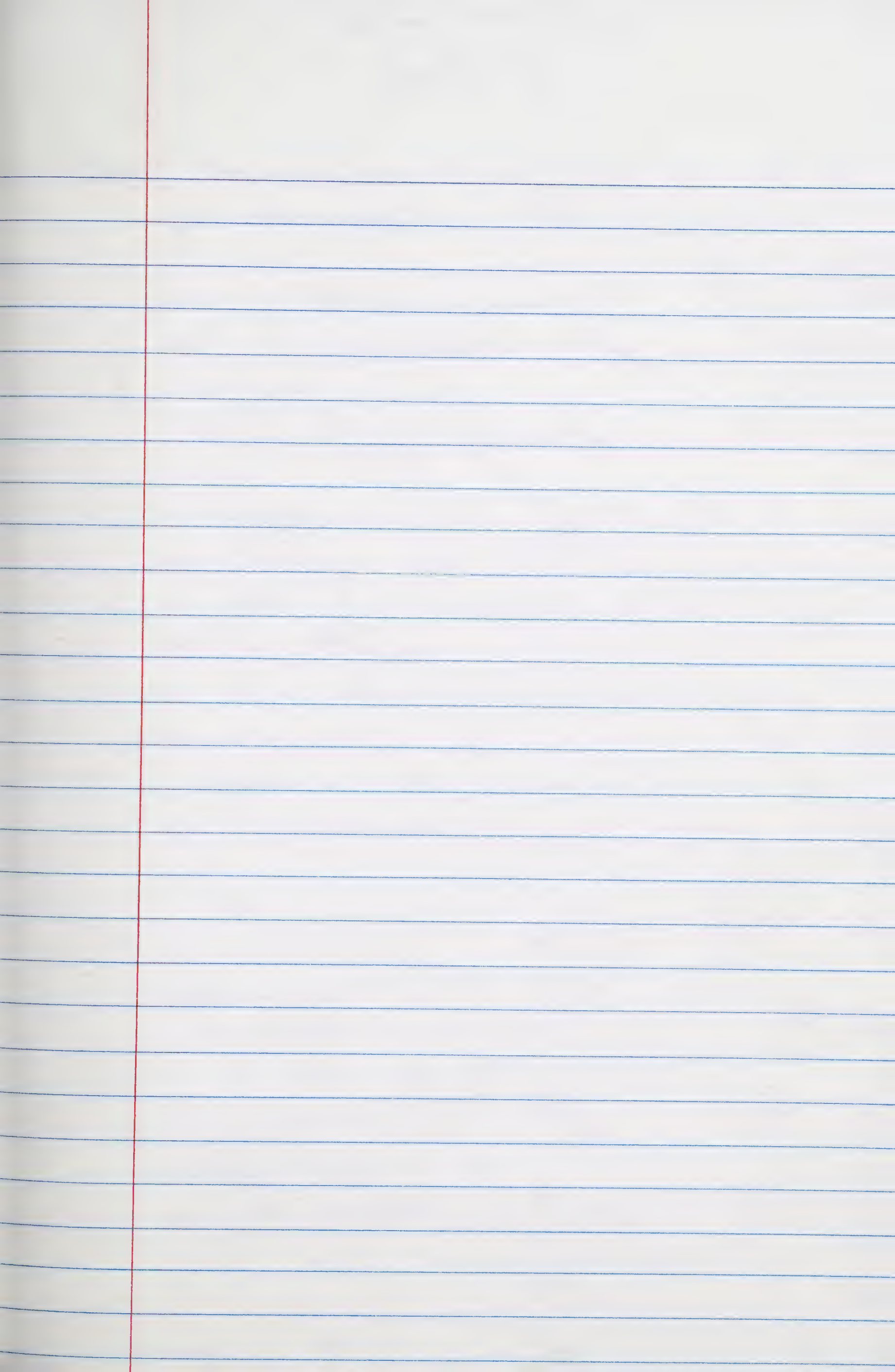
At acacia Camp (mountain scrub) things are quite green and lots of things blooming (but only a few Cactus flowers). Saw rattlesnakes working on them, and saw 2 *Phrynosoma* squabbling. Zonotrichia singing, thrushes, doves, etc. a few big Cereus blooms. Have the impression of greener and more flowers than 2 weeks ago. Much of the greenness is not from ground cover but from new growth on the bushes (plus *Brudelia*). The growth on the bushes will probably be caused by goats etc. At ~~our~~ or near our campsite were sheep, burrows, corn, & larvae.

March 28

Heavy dew. Left about 8:30 for Tarata. Visited + stopped there, then drove to the Tillandsia camp NE of Tacna. Vegetation same. Saw nightjar on the study area, on ground, at dusk, and heard some bird circling + calling overhead but couldn't see it.

March 29

Dew on car overnight (clear). Heard seed snipe at dawn. Saw lizard tracks on study area. The barrow is about 1 m deep and is about 30 yds from the inland edge of the grid. Big Tillandsia are 16" tall. To Tacna about noon.



$$\begin{array}{r}
 319 \\
 \times 4 \\
 \hline
 76
 \end{array}$$

$$\begin{array}{r}
 319 \\
 \times 4 \\
 \hline
 76
 \end{array}$$

$$\begin{array}{r}
 319 \\
 \times 4 \\
 \hline
 76
 \end{array}$$

$$\begin{array}{r}
 319.3 \\
 \times 4 \\
 \hline
 772
 \end{array}$$

Species accounts

Toads

March 15 (see some notes under March 15.), at 3 PM went out again (cloudy drizzly), found a 1" toad under a small stone 20° BT.

3:10 " " " " " med. stone 19°, air 9°, drizzle

3:20 a 1½" toad under large stone 18.5°

3:22 2" toad walking around in 8° ambient hood

body temp of 19½°.

Went out after supper (almost full moon)

and saw:

7:03 scattered clouds following rain, air 4°, ground 7°, toad 6°, wet dry 38-40°

7:15 1" toad moving across country, air 3°, encountered a big toad, both entered a Festuca clump, body temp in Festuca 6° (in ground in the clump. moth flying

7:30 1½" frog with leopard spots & shiny skin 8½°, walking cross country, air 4°.

March 16

Large toad with teleostei #2 swallowed, in screening

cage: 7:30 shade, no wind.

" "

7:55 " "

8:10

moved into sun at 8:10, at 8:16 →

" " 8:27 —————

8:32 - some clouds.

8:47 - " "

back into shade at 8:47

cloudy bright 9:03 in shade

" " 9:18 " "

" " 9:33 " "

sunny 9:54 " "

(4.6°)

19.3 - 10 chicks — 4.1° ambient.

(4.0)

20.0 - " "

(4.0)

19.8 - " "

(5.0)

19.0 -

(6.7)

16.3 - " "

(10.8)

13.0 - " "

(13.2)

16.5 -

(8°)

14.8

(6.7)

16.4

(7.0)

16.0

(7.3)

15.8

sublethal

(4½)

40° dry bulb.

(3½)

wet bulb 38°

(5)

dry 41, wet 40

(6½)

44 " 40

(8½)

47° wet 44°

(9½)

49° wet 45°

(10)

50° wet 45°

(11)

52: 43°

(11½)

dry 53°

9:54 moved him back into bright sun. all of these with swing thermometer.
 10:02 bright sun, light breeze (12.3°) 12.2 sec/10 clicks dry 52° wet 45° (7)
 10:12 " " " " (12.7) 11.7
 10:30 " " a few scattered clouds interval (14.7) 10.6 dry 55 wet 43 1/2 (13) (6 1/2)
 10:53 " " light breeze no clouds interval (15°) 10.3 (13) 55 (7 1/2) 46

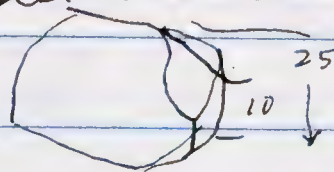
moved to shade and watered. above measurements were made in a fly-screen cylinder 1 foot long, 4" diameter. 21 gauge. 60m S-V.

at 2:15 pm put this morning's toad under a big rock, windy, sky 1/2 cloudy. His temp when we put him under rock 13.7 sec/10. (4.7°)
 2:22 - 13.3 sec/10 clicks. (10.5°) 2:45 - 13.1 (10.7°) Chargin' signal strength
 2:26 - 13.4 " (10.3°) 2:57 - 12.9 (10.9°) indicate that he is moving
 2:34 - 13.3 " (10.5°) 3:10 - ~~12.9~~ 13.0 (10.8°) around under the rock, which had + sloped runways.

3:57 - 12.55 (11.3°) sec windy, mostly clear
 4:25 - 12.6 (11.3°) " " " "
 5:06 - 12.0 (12.2°) " " " "

telemeter (#1) [toad]
 put a telemeter under a rock close to 2 other [lizard] rocks and

45 cm x 40 x 25



began recording in p.m. see Dave for first reading. This rock weighs about half the one with the toad and with Telemeter #2 in time of the two rocks are 6 feet apart

rock ambient
 sec/10 clicks
 4:45 - 6.7 = 11.4° 8.4° Schultze's

5:20 - 6.5 = 13.6° 8.0

5:52 - 6.55 = 13.7° 6.0

6:20 - 6.6 = 5.0

see Dave's = 12.5°

7:08 - 7.1 = 5.0

7:35 - 7.0 = 4.2

5:35 - 5:40 - 57.5 - 60.0 for 40 counts climbing steadily

6:05 - ~~egg~~ means about 80 sec for 20 counts

6:05 - 2.0 on Schultze's inbrear

6:15 - in vol under rock 4.2

Continuation of food under rock with telimeter # 2

Time x reads / 10 dals

5:19 PM 11.9 $\times 4 = 476 = 11.7^\circ$

5:50 11.9 11.7°

6:16 11.6 $\times 4 = 464 = 12.8$

see Dave

~~12.8~~

7:05 11.6 12.8

7:33 12.0 12.2

recaptured food from under rock (he stayed under rock whole time)

Calibration of thermocouple 9.0 - 16.5 = -7.5 = 5.2°

yellow sent forward,
volt scale 3

23.0 - 14.0 = 9.0 = 15°

54 - 24 = 30 = 31°

51 - 31 = 20 = 25°

more careful calibration as above,

6.0 - 14.0 = 0.4° = - 8.0

21.5 - 20.0 = 5.2° = + 1.5

44.7 - 25.0 = 18.1° = + 19.7

29.5
38.0 - ~~28.8~~ = 11.0 = + 8.5

scale 15 15.8 - 6.5 = ~~38.0~~^{37.9} = 9.3

scale 15 14.0 - 7.0 = 30.6 = 7.0

" 12.0 - 7.5 = 23.3 = 4.5

scale 3 52.5 - 40.0 = 15.7 = 12.5 doesn't fit

scale 15 20.0 - ~~38.8~~ = 43.6 = 11.2

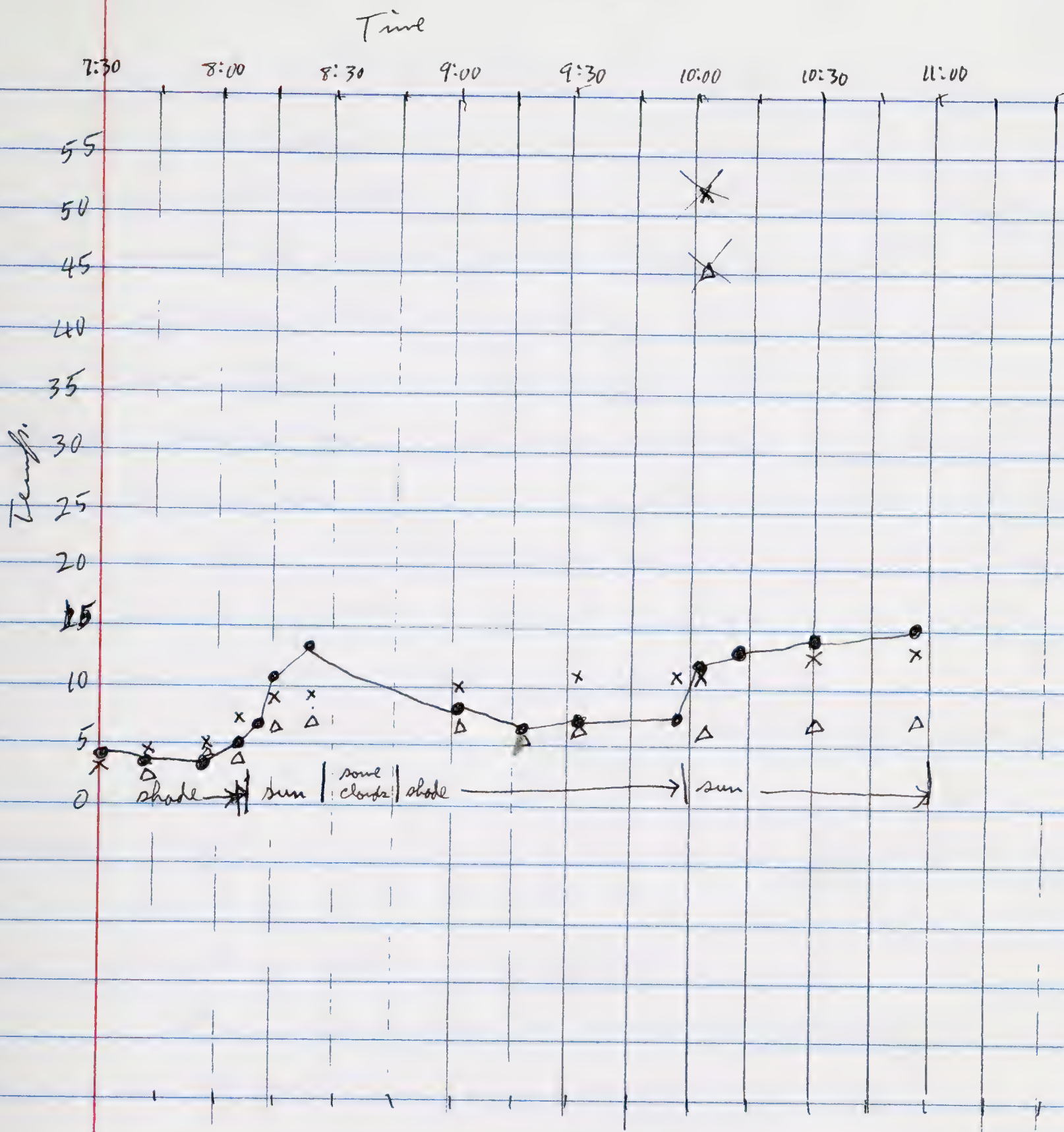
" " 23.3 - 9.0 = 49.4 = 14.3

46.0 - 40.5 = 13.3° = 5.5

47.3 - 42.0 = 13.2° =

use this calibration for
all measurements
until 7 a.m. on March 18.

• = Toad
 x = dry bulb
 Δ = wet bulb



March 17 med. toad walking around in Festuca at 4:44^{PM}, cloudy, windy,
 wet bulb 38°. Toad snuggled under a Festuca clump and sat
 still, at 4:59 his temp. was $13-12$ ^{6°} 3v. 5 mint-Vent #2.
 Dry bulb 46°. Temp. on ^{under Festuca} ground $19-16$ ^{7½°} moved to another clump 10
 feet away. 5:22 = $12\frac{1}{2}$ ^{7.0°} - 15 rect temp; in his clump $8\frac{1}{2}$ °.

at ~~7:40~~ 7:40. Toad encountered a medium toad near the tent,
 huddled along a board of our testing arena. It moved + huddled along
 this $2\frac{1}{2}$ foot board for about a half hour, then walked ~~20~~ ¹⁰ feet
 away and finally headed into a Festuca clump. just before

he went in ^{PM} (8:30) his rectal temp. was 4.0° , air 2" above ground 7.5° , soil surface 8.2° , a nearby *Testes* clump 6° . During the 51-minute observation period, there was little or no wind, it was cloudy, $6\frac{1}{2}^{\circ}$ ambient temp., soil surface (was hard) 5° , dry bulb - wet bulb 43° - 35° ; dryer enough so that in spite of cloud cover, stroking a wool scarf elicited static sparks.

March 18 Compared temps of toad & lizard in sun and shade (see data) ^(Brookfield 8 miles)
at 11:00, saw a finger-nail sized toad crossing the road, walking and hopping, air warm but overcast. at 10:30 wet-bulb dry-bulb was 44° - 57° . He covered about 10 feet in a few (3?) minutes and ended up in a *Testes* clump.

at about 4:30 PM walked around looking for toads, saw none. I was not lifting stones, however.

March 19 night was so "warm" and humid and still that I walked around for about 20 minutes at 4:10 AM (wet bulb - dry bulb both 37°) looking for toads with flashlight. Saw none.

at 9:10 looked under the big flowered toad rock NE of camp; big toad was at home, his temp. 8.9° .

Toad and Salamanders

1 mile east of Chalapa, 4000m

Time	Small toad	Large legless	Tobias	
			#2	Toad.
8:50				
March 18 Tethered in Sun	6.9 g	♂ 8.8 g	25.4	19.5
8:48	- temp 14.8°	11.0°	14.1	10 chills (4:52)
ambient 16.5°	8:53	17.2	20.2°	11.7
	8:56	17.6	24.0	12.5
	8:59	19.4	26.0	
net bulb 40° dry bulb 50°	9:02	19.8	27.4	
	light clouds			
	light clouds 9:06	17.2	25.2	
ambient 14	light clouds 9:11	17.0	24.2	
soil 21.5	light clouds 9:16	18.6	26.4	
9:12 full sun				
9:14 light cloud				
9:18 full	full sun 9:21	20.2	29.2	
very light	soil 25.0	9:25	22.0	30.4
trace from				
east.	full sun	9:30	20.8	32.0
	a few cloudy			
	moments			
soil 32	full sun	9:35	21.2	34.5
		9:42	21.5	34.2
		9:47	22.0	34.6
dry bulb 50				
net 43	into shade 9:49			
soil 31°	in "	9:51	18.4	30.7
still sunny	"	9:53	16.2	29.0
	"	9:56	16.8	26.2
	"	9:59	15.6	23.3
cloudy				
ambient 17°				
soil 17.2				
west wind begins	ambient 11.5	10:05	12.4	20.5
	ambient 14.8	10:09	13.0	19.5
soil 16.2		10:14	12.5	19.6
		10:19	12.9	18.5
	ambient 16°	10:24	13.4	19.4
net bulb 44°				
dry bulb 52°		10:30	13.4	20.5
		10:35	15.0	22.9 g
			weighed 5.0 g	
			weighed 8.5 g	

Tord ad ~~Scolopendromus~~ Scolopendromus

12:05 still in shade, cloudy bright. T rectal 13.5°, 4.2 g, somewhat
dried and moulting, but cold to touch. Tarsal body temp 19.0°, body
weight 8.5. Soil 18°, shade temp 17°.

Although the sky was completely clear at the start of the
above experiment, wispy clouds kept forming near the sun
and reducing intensity of light. Towards the end, a capricious
colder breeze from the west also introduced variations.

~~Scolopendromus~~
march 18 Scolop adult ♂ at Pyrocephalus with 3 stones:
afternoon windy, $\frac{1}{2}$ clouds, see other weather data. He had been 6"
outside his hole for at least a half-hour before observations
began at 2:30. 2:38 air 13°. ^{Sitting} ~~located~~ on bare ground inside of
Pyrocephalus ring, one side up against the pyrocephalus.
2:30-2:52 windy almost not sun. 2:53 air 13°. Had movements on
two or three occasions only, up of leg to 2:59, clearer chilly in
woolies, wool short, and in car (with open window, 3:15-12.2°,
still no movement, no sun, strong wind, ³ 3:30 has been some slightly
fitter sunshine, still windy, 13°. 3:39 walked 6" down into
his burrow, possibly because anta walked nearby. air
temp. 12°, windy, cloudy. anta saw none as she walked
through her area, but the "tagged tola" lived beyond this
one is still out. 3:12 Pyrocephalus male with head out
of his burrow. 3:47 more down hole. air 11, windy.

march 20 9:59 - 1" brown toad in other snuggling into depression, cloudy -
bright. 10:00 walked vigorously 2 ft., then stopped. 10:02 walked
into base of tea bush. Soil temp 15°, air temp 10°.

Toad and Frodo

10:05 Toad ^{with yellow feet} at Pyro. 10:15 20.5° body temp. after almost steady journey of 20 yds. 1" toad black with yellow feet cloudy, sun came out during his journey. All this by breeze, wet bulb 44°, sea surface temp. of a few minutes earlier.

3/22

10:36 Tiny black toad with yellow feet heading north (they all do!). Sun bright, wind. Hops and walks frantically, a few cloudy periods ~~by breeze~~ ~~by breeze~~ ~~by breeze~~.
 10:45 more clouds
 10:46 Still a few snow patches in Festuca
 10:52 Stopped and dug himself, partly into soil looked into hind feet.
 10:55 Snuggled into his shallow, scoops out, not wet.
 10:56 Full sun for at least 2 min. Then oral temp. 28.5°C. shade temp 54°. Schnitzler ~~not~~ with cheese tooth (met) 10.5°C. He travelled 33 yds. in the 16 min before he dug himself in. His S-V length 19 mm.

1/22

Telented lizard notes to be added to Antas:

9:30 still ~~no~~ snow patches
 10:46 still a few snow patches
 11:32 has been on Festuca for ± 10 min.
 11:40 sunny, clouds all around but not here. Breeze from west.
 11:44 hot.
 11:47 under told
 12:00 9 minutes basking on rock. Scared him trying to get his temp., then he went to another rock and basked
 12:15 still basking on this other rock $16.2/40 = 32.7^\circ$
 12:23 " " " " " "
 12:24 left rock. Thunder, clouds, no wind.
 12:26 W. sprinkles. $17.8/40 = 30.8^\circ$
 cool breeze from west, mostly cloudy.
 12:37 Herded him down hole $24.4/40 = 24.6^\circ$
 but he didn't like this hole and with a little herding headed back for his Pyro burrow of night before last.

Ptychocheilus ♂ with transmitter #2
 stuff tail. 84m SV, 18g.

March 20

10:55

Operate and release 10:55. Tried to come back up,

11:15

plugged up hole with banking until 11:15 ^{16.5} 18.7 sec/20 clicks
 air 58. ²/₃ cloudy

11:19

18.9 sec/20 = 16.6°

11:19^{1/2}

Went deeper in burrow? At least didn't stop

11:18

out of back door? at 5 ft away to table beyond hole.

11:28

at base of table beyond hole, ¹/₂ cloudy.

11:37

Presumably still under table.

11:45

Has been continued sun, butterflies and flies.

11:53

Continued sun.

11:55

He in full sun about 4 ft beyond table.

11:59

Into partial shade of table, possibly eating. But he doesn't full sun.

12:07

Still full sun. at 1/2 per cent.

12:15

Still sun, breeze from east. His location seems to be about 10 ft from pipe.

12:23

Still taking full sun.

12:25

Cloud.

12:27

Embarked on a 10-minute territorial expansion past top of table
 and to a table - inch deep near road in line with road to pipe.

12:55

Still same place. Cloudy since about 12:27.

12:58

near car (across road). Cloudy. Off and on digging for about 5 minutes

1:05

near car. Cloudy. Dave returned.

1:09

Dug other *Ptychocheilus* burrow.

1:09^{1/2}

32.4 sec for 40 clicks = 19.4°C = ~~15.7~~

1:16

19.7 sec for 20 clicks. wind from W. Cloudy. Thunder = 15.7°

1:24

21.8 13.9° air 10.4°.

1:28

23.1/20 12.9°

1:29

had air 8.6°, 1:31 23.6/20 1:34 24.2/20 1:37 air 6.2°

1:38 24.7/20 1:43 air 5.7 drizzle 1:44 25.1/20 1:50 25.6/20

opp
1973

Lizard with Telenotus

March 20

10.7

2:05 26 sec/20 clicks rain-hail

2:32 41° raining 10.7 26.0/20 clicks 2:52-dry 11.9 25.8/20 sec

4:46 PM Windy rainy with hail-dry 40-41° 27.0/20 clicks

3/24

9:15 AM. Went to big rock near camp near which we had measured "Rock temps" and under which we had ~~always~~ found a big toad. Rolled it - empty. 5 yds away at the floured rock ~~with~~ (flat) were two big toads: 7.8° and 8.2°. (This rock had reliably held a toad)

Excavated the *Synophyllum* burrow #2, used by our *Telenotus* lizard on his 1st and 3rd nights. The side branch used by him was a blind pocket about 4" deep. Slight pressure in the other direction broke into a large Texas burrow (containing a medium toad). See journal 3/23 for burrow no. 1.

Toad 7.8 g., Lizard 7.0 g. into wire cages in shade at Yareta Camp 2:04 Breeze from west. In shade of ~~car~~ ^{scattered} clouds.

2:10 wet bulb 48° ^{dry 56°} 2:28 lizard 18.0, toad 11.4°

2:31 " " 49° " 55°

Went toading 4 PM in cold drizzle at seep near Yareta Camp. Under one med-sized flat rock was a huge lizard 16.5° and a medium toad 15.0°. Nearby under another stone was a medium toad 12.5°

3/25

same toad & lizard as yesterday into wire cages @ 10:55 a.m. sunny, breeze from east. Toad 7.0 g., lizard 7.0 g. 11:00 wet bulb 45° ^{dry 58°} 11:19 cloud to 11:22; cloud 11:23-11:25. 11:33 wet bulb 46° ^{dry 60°} 11:35 toad 14.8°, 6.2 g., lizard 24.4°, 6.9 g. sunny with breeze.



Yarto camp, 13 km NE Tarata

March 26

Hatched lizard integrator and black body integrator (resting)
at 6:30 a.m., temp. 34° ; then went down to the big scarp to
look for a big Solomon. Hunted long where I had seen 6
big ones yesterday and eventually found one near the big boulder close
to the road. He was under a smallish 1-foot round boulder.
Inserted integrator at 7:35 and returned him to under the
rock. Under-rock temperature 4° .

7:55 - Emerged $\frac{1}{2}$ way out and is $\frac{1}{2}$ in weak sun. Shade temp 42° .

8:03 - $\frac{2}{3}$ rd in sun.

8:05 - $\frac{3}{4}$ sun

8:08 - Sun went behind cloud and he crawled into the 2" crack between
his rock and a much bigger one.

8:13 - partly emerged, but I frightened him back in.

8:25 - 48° still cloudy, no open sun since 8:08.

8:28 - cloudy-cold but he emerged from under his rock $\frac{1}{2}$ way.

8:36 - " " " he emerged a little farther, $\frac{3}{4}$

8:53 - $48\frac{1}{2}^{\circ}$, cloudy. Lizard still $\frac{1}{2}$ to $\frac{3}{4}$ exposed but no sun.

9:08 - a total of about 1 min. of filtered sun between 9:00 and 9:08. Lizard $\frac{1}{2}$ exposed.

9:24 - air 50° . Cloudy. Lizard $\frac{2}{3}$ out.

9:37 - Seared in by sun. air temp 50°

9:44 - head + forelegs out of hole - which is really in shade of rock (except top of head)
cloudy bright + windy.

9:49 - emerges further - $\frac{2}{3}$.

9:53 - moment of full sun.

9:56 - emerges very slowly - now all but tail in sun. cloudy windy

10:10 all but tail out of hole. In last half hour only a few
moments of full sun.

10:22 $\frac{2}{3}$ exposed, a few moments of sun.

10:30 air $54\frac{1}{2}^{\circ}$. 9:45 soil temp. 12° .

10:44 sun rapidly lost behind.

10:50 air 55°

10:52 sun

10:54 now 15 ft from rock.

10:55 shade

11:02 scattered sun.

11:10 - trying to defecate - hemipenes somewhat erect; supports
self on tail, raises pelvis.

11:13 - mad dash ^{1 yd} + under large rock.

11:16 - $\frac{3}{4}$ out from under rock.

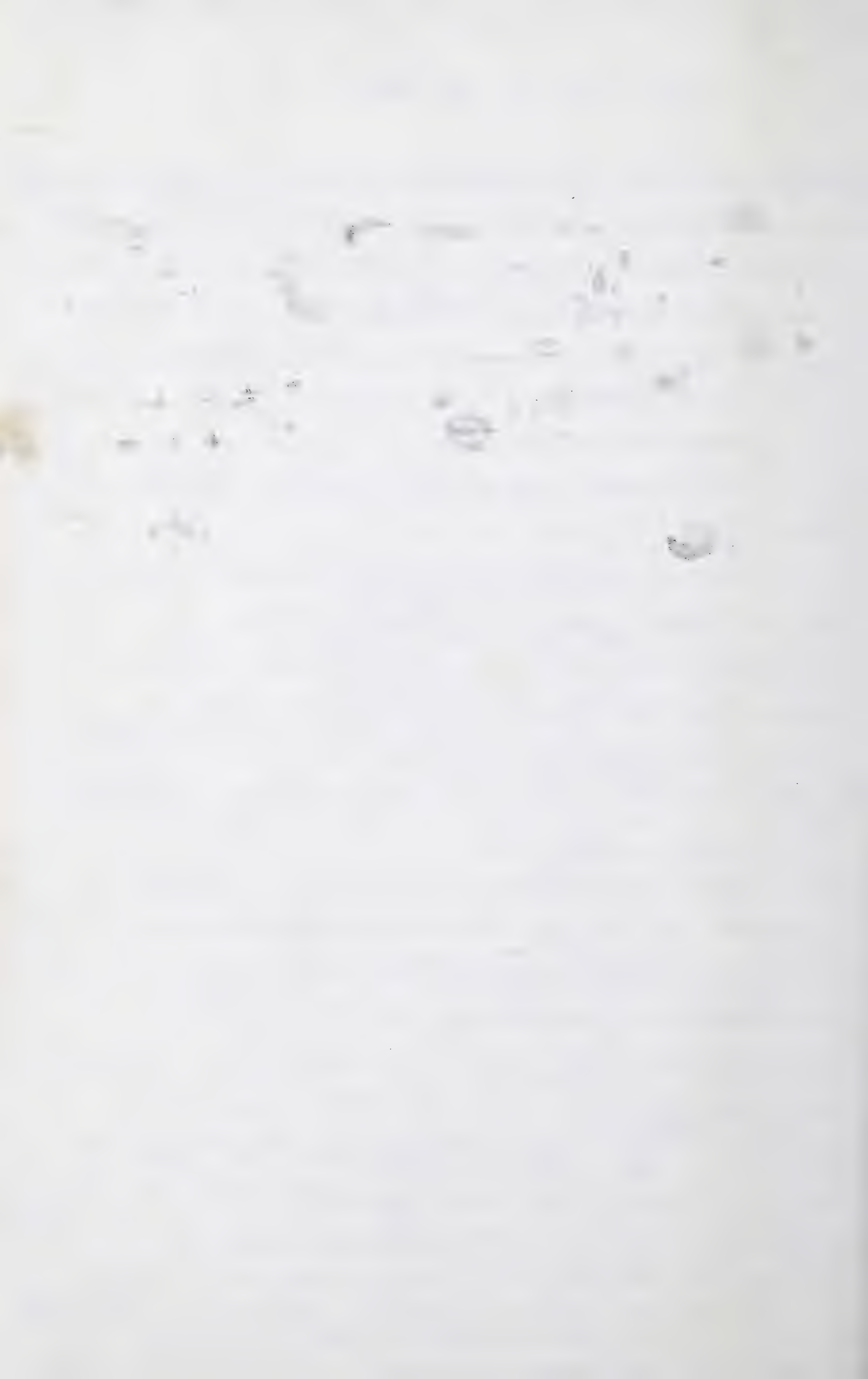
11:18 - all out - sun + clouds. some wind

11:45 - air 55°

11:55 - fairly bright sun for some time. Lizard moved $1\frac{1}{2}$ feet under big
boulder.

11:40 - in a half an hour saw 5 small lizards and 3 big ones.

11:58 - $\frac{3}{4}$ out again.



- 12 09 Under rock again.
- 12 13 air 55°
- 12 14 Lizard out again. Full sun. Saward pocket ziffles first time today
- 12 20 Into burrow again. Full sun. no wind, quite flying.
- 12 24 Part way out again, but in shade.
- 12 25 $\frac{3}{4}$ out.
- 12 27 cloudy, cool. Only a 1-min flurry.
- 12 29 $\frac{1}{2}$ lizard out into burrow.
- 12 29 lizard out again.
- 12 45 no sun since last. Went down burrow just as rain started.
air 55° $\frac{1}{2}$
- 12 55 Heavy cloud, cold wind - but his head is out of burrow
- 12 58 $\frac{3}{4}$ out lying on warm? rock.
- 1 02 Temp 50°, no sun
- 1 10 Cold wet wind.
- 1 30 mist drizzle
- 1 32 ran 20 ft ~~west~~ south to rock, then across road (40 ft) to big pile of rocks.
- 1 37 temp. 51
- 1 38 bird, briefly
- 2 27 cloudy bright, cool wind, no signs of lizard. Temp. 49°
- 3 45 foggy 43°
- 4 45 starts mist 43°
- 4:13 mostly bright, starts mist, temp 45°
- 5 20 cloudy calm 42°
- 6 00 cloudy 40°
- 6 55 clear 39°
- 8 00 Partly heavy 38°
- 10 50 PM 37°
- 3/27 2 30 AM 40° rain drops
- 3 50 40° cloudy
- 4 45 38° cloudy
- 5 45 39° cloudy
- 7 00 40° cloudy windy 42°
- 7 35 41° cloudy breeze 5
- 8 15 8° filtered sun, no lizards out
- 8 38 air 8 $\frac{1}{2}$, filtered sun. Lizard out, but must have been just out, his cloacal temp 7.5°
- 8 55 Lizard integrator reads 7.5
- 9 00 Black body integrator reads 6.7



3/28 - Temp. preference - Lillandsia desert
Lizards from 1 mi E Chalchupala

#3 Lizard (p. Chalchupala) 80m SV ♂ telenoter in pt
2:05 PM

#6 Lizard " too small for telenoter

#3 2:12 into cool box in sun on sandy substrate

2:15 air 28° lizard in shade

2:16 lizard in shade, 9.8/40 clicks $\pm 31.7^\circ$

2:19 " " " 9.0/40 $\pm 32.8^\circ$

2:22 " " " soil temp surface $32 \frac{1}{2}^\circ$

2:24 " " " 8.2/40 $\pm 33.8^\circ$

2:27 " " " air 28°

2:31 " " " 8.1 $\pm 33.9^\circ$

2:40 " " " 7.9 $\pm 34.2^\circ$

2:47 " " " air 27°, soil $32 \frac{1}{2}$

2:57 " " " 8.0 $\pm 34.1^\circ$

3:05 " " " air 24°

only 3 very brief sojourns into the sun so far. Still avoids

3:08 shade. 8.1/40 $\pm 33.9^\circ$

3:18 still large shade, air $23 \frac{1}{2}$, his soil shade $31 \frac{1}{2}$.

3:25 7.8/40 $\pm 34.3^\circ$

3:33 still avoiding sun

3:44 air $23 \frac{1}{2}$. still avoiding sun.

3:47 8.7/40 $\pm 33.1^\circ$

3:54 8.9/40 $\pm 32.9^\circ$ not seeking sun

3:57 air $22 \frac{1}{2}$

4:03 9.0/40 $\pm 32.8^\circ$

4:04 stayed in sun about $\frac{1}{2}$ min.

4:08 shade still 8.8 $\pm 32.9^\circ$

4:12 shade soil $26 \frac{1}{2}$. air 22°

4:16 9.2/40 $\pm 32.5^\circ$

4:20 air 22°

4:24 stayed in sun about 1 min. 9.3/40

4:26 8.9/40 $\pm 32.9^\circ$

4:27 8.7/40 $\pm 33.1^\circ$

4:30 9.3 $\pm 32.4^\circ$

4:31 9.3 still not using sun, although
not avoiding it as much as earlier.

4:36 9.9 after staying in sun (weak) for about 1 min.

4:38 10.2/40 $\pm 31.3^\circ$

4:39 10.0 $\pm 31.5^\circ$

4:42 in sun ± 1 min, 9.9 $\pm 31.6^\circ$

4:44 " " " 9.6 $\pm 32.0^\circ$

4:46 " " " 10.0 $\pm 31.5^\circ$

4:47 " " " 9.7 $\pm 31.9^\circ$

4:49 about equal time sun (weak) 10.1

4:51 in shade 10.1 $\pm 31.5^\circ$

4:52 in sun 10.0 $\pm 31.5^\circ$

4:54 in sun 9.9 $\pm 31.6^\circ$

4:55 " " 9.6 $\pm 32.0^\circ$

4:56 in sun 9.3 $\pm 32.4^\circ$
into shade for ± 1 min

4:58 back into sun 9.9 $\pm 31.6^\circ$

4:59 still sun (weak) 10.2 $\pm 31.3^\circ$

4:59 $\frac{1}{2}$ moving around 10.4 $\pm 31.1^\circ$

5:00 into sun

5:00 $\frac{1}{2}$ 10.7 $\pm 30.7^\circ$

5:01 $\frac{1}{2}$ 10.6 still in sun $\pm 30.9^\circ$

5:02 $\frac{1}{2}$ 10.1 " " " $\pm 31.5^\circ$

5:02 $\frac{3}{4}$ moved into shade

5:03 $\frac{1}{2}$ back into sun

air 20° $\pm 30.7^\circ$

5:04 $\frac{1}{2}$ in sun 10.7 $\pm 30.6^\circ$

5:05 $\frac{1}{2}$ 10.9 in sun $\pm 30.9^\circ$

5:06 $\frac{1}{2}$ 11.1 moved around $\pm 30.4^\circ$

5:08 11.1 very faint sun but he
clinging to it.

8.0/40 $\pm 33.7^\circ$

9.0 $\pm 32.8^\circ$

10.0 $\pm 31.5^\circ$

11.0 $\pm 30.5^\circ$

Liolanthes multiformis ♂
 from 1 mi E Chalchopala

Thermal Preference. Telenote no. 3.

3/29 Put into box in sun.

6:53 - 37.2/40 ^(=16.3°) air 18.8°
 7:00 - 17.7/40 lizard in sun, quiet = (24.1°)
 7:02½ - 14.3 = (27.2°) " " "
 7:05 - 11.4 = (30.0°) " " "
 7:06 - first movement (escape attempt)
 7:07 - 10.0 still in sun (31.6°)
 7:09 - 8.4 more squaring, still in sun
 7:10½ - 8.1 = (33.9°) " " ½ " "
 7:11½ 8.3 = (33.7°) " " in sun (filtered sun, not real bright)
 7:13½ 8.2 moved into shade briefly, returned to sun
 7:15 shade & sun 8.3. [moving around in spots] (33.7°)
 7:17½ " " 8.1 (33.9°)
 7:19½ " " 8.1
 7:21 had moved briefly into shade 8.1 (33.9°)
 7:22½ into shade 8.1 (33.9°)
 7:23½ " " 8.5 (33.4°)
 7:24½ in shade still 8.4 (33.5°)
 7:25 into sun 8.8 (33.0°)
 7:26 in sun 8.3 (33.7°)
 7:27½ part sun 8.6 (33.3°)
 7:28½ in sun 8.3 (33.7°)
 7:29 " " 8.1 (33.1°)
 7:30 ½ sun 8.7 [= ½ in sun or part of time in sun + part shade]
 7:31½ ½ " 8.6 (33.3°)
 7:32½ ½ " 8.7 (33.1°)
 7:34 ½ " 8.6 (33.3°)

♀ from 1 mi. E. Chalchopala. Using Schultze's, 5-64 mm.

7:37 dumped into sun-shade box. Pushed into sun.
 7:39 sun.
 7:46 in shade
 7:48 in shade
 7:49½ ½ in sun, Close 32°
 8:00 in shade 35.0
 8:03 " " 32.0
 8:06 air 22.2°
 8:09 31.4° just as she moved into sun after about 2 or more minutes in shade.
 8:14 31.0° " " " " " 2 or more " " "
 8:20 several minutes partly in sun, then all shade at 8:19½. 8:20 = 34.6°
 8:27 shade since 8:20. 30.4° Soil temp 23.2° (shade)
 8:33 tot in sun, rest in shade since 8:27. 31.6°
 9:05 Full sun for at least 1 min. 38.4°
 9:14 34.2°, Had been in sun and in shade.
 9:17 air 22°
 9:19 32.2° had just stuck head into sun after several minutes in shade.

3/19/73 - Challapalca

Lizard Watch
A

6:30 - cloudy but not too cold

Pycnophyll lizard

Tagged Tola lizard

quells calling

not in sight

not in sight

2

not in sight

Disappeared down hole as ants walked nearby,
was not out a few minutes earlier.

9:33

bright, cloudy

—

sitting on little rock

9:47

—

moves to tola clearing

9:54

—

went down Tola hole. air 55°

10:07

—

in tola clearing, quite dark.

10:13 bright, cloudy out in burrow

"

10:25

completely exposed to view

"

10:27

"

crawled to "partial shade" of bush
• back out to open

11:06 light
sprinkles

"

"

11:27 lt.
rain

"

"

11:50 lt. rain

to edge of
went down hole & when I
got out of cor

"

11:53

re-emerging

"

:55

↓

"

in "partial shade" of bush (from rain?)

11:56

open

open

12:10 - cloudy, light on pycnophyllus

on dirt in center of tola

12:17

same

lost briefly
1 yd S. tola - sitting at plot

12:18

leaves at more vegetation

12:20

eyes shut much of time
bobs, moves 1 yd off pycnophyllus, grazes at mat,
moves 1 yd N, grazes. Runs West, across
bush bath area, stops & defecates (long, red protrusion)

back to tola - dirt in center
- close tracks of this guy
... ? ...

12:30 sun

12:40 sun

moves slightly further west; grazes

on dirt in tola

12:45 sun

sits in sun

back sunning behind

12:47 sun

disappears into base of Festuca

lost for ~ minute

12:48 now moves into tola 1 ft to left, partial shade.

12:50

moved into sun near tola;

ran around in front of bush

12:54

tagged
chased towards tola & beyond to Festuca

ran off to left as if chased

1:06 overcast and suddenly colder.
ran home by way of Festuca triangle. Bob2.

1:20 Cold wind from east. He disappears down his burrow in Pycnophyllus about 1 min later

1:24 - sprinkle of rain air cool

3/19/73 - Chalapaalca

Pygophylla lizard

Taggel Tola lizard

at west wind
p 9 1/2°

midly bright
and cloudy

2:05 Pyeno ^o with head out of burrow

not at usual place

2:15 Thunder and lightning no effect

2:18 cold windy rain begins

2:19 liz went down Pyeno burrow.

AKV

Lizard Watch

(1)

Pyrenophthorus lizard - see OP notes about implant on 3/20, and shift to *Pyren* mat across road.

lizard with telemeter implant

6:25 - sun hits *pyrenophthorus* under which lizard is

3/21/73

7:00

34.4

34.3 ~~climb~~

33.9 time/20 slugs

33.6

33.7

7:15

33.6

34.0

33.6

7:25

34.0

; 33.9

7:37

34.0

7:42

34.1

7:50

34.8

6.0°

34.6

6.1

$T_A - 37^\circ$ cold wind from east

7:57

34.8

8:05

35.0

5.9°

→ ♀ lies on *pyren* pad! cold wind no other lizards seen out

8:12

34.8

8:14

34.9

8:20

35.0

8:25

35.2

5.8

suddenly louder: 8:29

8:30

33.6

- in sun at burrow entrance - all exposed

8:31

31.3

6.50 → 7.7°

8:32

30.4

9.1°

8:32

29.0

8.9°

8:33

27.6

9.8°

8:33

26.0

10.7°

8:34

24.0

12.2°

8:34

23.0

13.0°

8:35

21.8

13.9° - $T_A 43.0$

- ♀ still out on *pyren*!

8:36

21.0

14.5°

8:37

20.0

15.5°

8:38

19.3

16.1 in full sun. Cold wind

8:39

18.7

16.2°

8:39

18.3

17.2°

8:40

17.5

18.0°

8:41

17.0

19.5°

8:42

16.1

19.5°

8:43

15.6

20.0°

8:44

15.3

20.4°

8:45

14.6

21.3°

8:46

14.2

21.9°

8:49

13.5

22.9°

$T_A = 45.$

8:50

13.0

23.6°

[fingers numb - observers cold - cold wind]

3/21

(2)

	8:52 AM	12.8 / 20 chits		
	8:53	12.6	♀ still on Pgc 1	
	8:55	12.1		
Butterfly	8:57	11.8		
little black toad hopping by. Hopped 12' in 3 min into tola complex. at 8 min, had gone 30 ft., straight line. $T_8 = 16.2^\circ$	8:59	11.4		
	9:02	10.7	$T_A 46.0$	all sun - cold breeze
	9:06	10.2	♀ still on Pgc 1	
	9:07	19.8 / 40	♂ shifts position slightly	
	9:09	19.9	" still at burrow entrance, full sun, down out of wind	
	9:11	19.5	" (♀ still on Pgc 1)	
	9:13	19.0		
	9:14	18.7		
	9:15	18.6	$T_A 46.0$	♂ still quite dark grey
	9:17	18.6		still full sun - further out of burrow
	9:20	18.0		
	9:23	17.5		→ 4 1/2" lig appears close to OP.
	9:24	17.5		
	9:27	17.2		
	9:29		moved down into burrow further	[could't find tagged tola: ♀ still on Pgc 1]
	9:30	17.8		
	9:34	19.7		
	9:34	20.0	full sun, cold breeze	$T_A 49.0$
	9:37	20.0	"	
	9:39	19.2		[♀ took 1 min excursion off Pgc and back]
	9:43	18.9		
			Brown Pgc: 21.7	
			Green " : 22.9, 18, 19	
	9:45	18.2		
	9:44	17.4	♀ on Pgc 1	sunny, cool breeze
	9:53	17.3		$T_A = 51.0$
	9:58	16.7	Still at burrow mouth; quite grey	
			♀ on Pgc 1; tagged tola ♂ on marker rocks	
			It gone again	
Alpacas turned out.	10:02	16.7		
	10:05	16.7		
	10:08	16.8		
	10:13	16.2	all out of burrow mouth - on off Pgc.	(full sun cold & wind)
	10:19	16.3	" ; ♀ on Pgc 1	
	10:23	16.2	"	
	10:29	16.2		
	10:30		♀ frightened (?) leaves ? or goes in hole - can't be found	
	10:37	16.3	♂ on Pgc - all out of burrow	can't find it or
	10:44	16.1	"	
	10:47		bobbing	$T_A = 55.0$ full sun, cold breeze
	10:48	16.0		
	10:49		left burrow after bobbing and going into mouth of burrow	
			briefly	
	10:52		Went 3 ft. away and stopped with front feet on a pebble	
			bobbed when he arrived at pebble	
	10:57		cool breeze lessening; the first cloud.	
	10:58		off rocks, hop, then into tola bush	
	11:00		lying on dead Festuca, all this within 4 ft. of the overgrown bush	

3/21/73

11:03 Cold wind again and partly cloudy. Eyes shut.
 lost in Festuca

11:25 in middle of Festuca

11:27 8.8/20 ^{31.8} cloud: lig in Festuca clump on dead leaves

11:30 moved in under dense Festuca

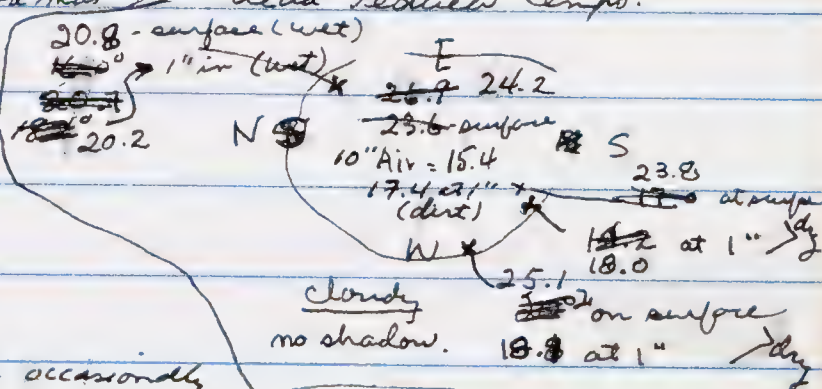
11:37- can't pick up signal. Cloudy since 11:27.

11:43 sitting on dry Festuca still cloudy $T_A = 12.9 = 53$.

11:48 8.8/20 ^{31.7} still cloudy: lig is sitting on spot out of wind.

12:15 8.5/20 same place: flat, dead mat. Dead Festuca temps.

12:18 - first seen after long cloud
 then bright cloud almost
 immediately



12:30 left basking pod.
 bobbing in open

12:35 has moved 20 ft north, bobbing occasionally
 (maybe lizard on rock 3 ft. away)

12:45 about 50 ft north of burrow

12:47 temp. just under dead grass of his Festuca basking pod 28° ^{cloudy} _{high}

12:48 lying on a dead Festuca pod.

12:50 moving again.

12:55 seen for about 10 minutes now

1:03 he is now 30 yds from last night's burrow

1:10 somewhere in a big ring of Festuca,
 cold wet wind blowing, heavy clouds.

1:20 hail started, lizard in Festuca. ^{another med. lizard disappeared into a Festuca clump 3 ft away.}

2:52 bright-overcast, lizard in middle of live-dead, hail filled Festuca clump

2:52 35.8 sec/20 ^{clicks} ~~clips~~ = 5.6

2:58 36.2 sec/20 ^{clicks} = 5.4. Nearly similar Festuca, 4° . Lizard's home

burrow was clogged completely with hail.

4:02 37.4/20 Festuca soggy + snowy. weather soggy = 4.9°

4:08 more rain

5:35 38.8/20 ^{4.4} cloudy wet cold drizzle

March 22, 1993

~~March 22, 1993~~

3/21/93 9:50 PM 9.4/10 = 4.3°

9:10 PM 9.1/10 = 4.6°

12:15 AM - 38.2/20 = 4.6°

3:20 AM - 39.0 = 4.3°

5:40 39.4 = 4.1°

6:20 39.3

6:26 sun arises

6:56 40.0 full sun, calm = 3.8°

7:15 39.7

7:21 39.3

7:25 39.8

7:33 39.3

7:35 39.3

7:38 39.3

7:43 39.5

7:49 39.3

7:52 38.2 $T_A = 13.0$

7:56 39.3

7:59 39.3

8:06 39.0 = 4.2°

8:14 39.0

8:20 39.3

8:25 39.0

8:27 39.3

8:28 39.0

8:31 40.5

8:33 38.8

8:34 38.7

8:35 39.0

8:35 38.5

8:38 38.8

8:39 38.3

8:41 38.7

8:48 38.0 4.6°

8:52 38.0

8:53 38.0

8:58 38.0

9:02 37.8

9:07 38.1

9:11 38.5 = 4.5°

9:16 38.7 < loss of signal

9:27 37.0 = 5.1

9:28 36.0 = 5.5

9:29 35.0 = 5.9°

9:30 34.0 = 6.3°

9:32 32.8 = 6.6

9:34 31.0 = 7.8°

9:35 29.0 = 8.9°

9:37 27.2 = 10.0

9:38 26.0 = 10.7

9:39 24.0 = 12.2

9:40 22.0 = 13.7°

- Dave saw other salt lizard out.

not visible to us during this warmup

butterflies

A.K. Pearson
1973

Zobesomus multiformis

(5)

3/22/73

sunny, some wind

9:42 AM

21.0 sec / 20 clicks

14.5°

9:43

19.0 = 16.4°

9:45

dropped out of feathers on

9:53

11.3/20 = 26.2°

outside of cage, in full sun

herding him to hole

9:55 - cold wind from east begins

10:02 herded him to 12 ft to hole, left him to
watch from cave.

10:12 still at same position where we stopped herding him.
He barked in full sun, cold east wind.

10:17 still same

10:25 also same

10:29 (first cloud) 10:29 1/2 Temp 7.7 sec / 21 clicks

31.3°

10:33 sun again.

10:37 = same 10:37 herding with

10:40 per cloud

10:41 - sun again; herding from cage

11:01 moving in direction of 8 m to left. Still barking.

11:06 16.3/40 = 32.5° full sun; barks on rough

11:20 out of sight in distance again

11:25 barking on 10 ft distance

insert ref P.

in 30 min

12:42 28.0/40 T_p 19°

22.1°

clouds & rain beginning

12:43 29.5 = 21.1°

12:45 16.0/20 = 19.6° - partly out of hole

walked 12 ft to old Pigeon hole. still at distance
clouds & cold wind

12:47 down hole

12:48 34/40 = 18.5°

Pearson
1973

Geolacerta multispinis

(5 1/2)

3/22 telemetered lizard. Insert in A K Pearson notes.

8:30 still snow patches

10:46 still a few snow patches

11:32 has been on testis for ± 10 minutes

sun + shade, no wind.

11:40 sunny, clouds all around, breeze from west.

11:44 hot

11:47 under tola

12:00 9 minutes basking on rock. Moved from there to another rock to bark.

12:15 still basking on other rock $16.2/40 = 32.6^\circ$

12:23 still on rock.

12:24 left rock. Thunder, clouds, no wind

12:26 was sprinkled. $12.8/40 = 30.8^\circ$ cool breeze from west, mostly cloudy.

12:37 Moved him down hole $24.4/40 = 24.8^\circ$ but he didn't like this hole and with a little herding headed back - line for his *Phrynosoma* burrow of right before last.

3/22/73

12:52 PM

$T_a = 10.7$ hail - long down Pagans hole #2

12:53

$19.8/20 = 15.6^\circ$

12:53

20.1

12:54

$21.0 = 14.5^\circ$

12:56

21.2

12:58

$22.7 = 12.5^\circ$

1:06

$22.2/20 = 13.6^\circ$

1:15

$27.8/20 = 9.6^\circ$

1:18

$28.1 = 9.5^\circ$

1:24

$25.0 = 11.5^\circ$

1:26

$26.0 = 10.7^\circ$

1:32

26.2

1:38

$26.7 = 10.3^\circ$

1:49

$27.2 = 10.0^\circ$

2:01

cloudy

$27.6 = 9.8^\circ$

2:19

hail

$27.9 = 9.6^\circ$

2:40

rain

3:32

rain

$27.9 = 9.6^\circ$

4:12

rain

$28.4 = 9.3^\circ$

5:13

rain just stopped

$29.3 = 9.1^\circ$

6:20

cloudy

29.4

8:00

"

$30.0 = 9.1^\circ$

3/23

12

midnight misty - clear

32.0

ambient

32° frost calm misty

3

10 AM

33.9

6.3"

28° frost clear calm

5

55 AM

35.0

5.1"

28° minus 28°

6

45 AM

35.4

6.7"

7

12

36.0

5.7"

7

32

36.0

5.7"

7

40

36.3

5.7"

3/23 Telemetered lizard.

7 47 36.2/20 sunny.

7 57 36.4

8 06 $\frac{1}{2}$ in mouth of burrow but no clicks, changed back position.

8 11 not back up

8 17 not back up 36.3/20 = 5.3°

8 22 up, no signal

8:29 - 32.7/20 6 5.4 = 6.5°

8:33 24.4 see below

8:36 22/ sitting in full

8:34 21.7 sun at burrow

8:35 20.9 = 14.5° entrance 41.8°

8:36 19.8

8:37 19.0

8:37+ 18.4

8:38 17.6

8:38 17.0 = 17.4°

8:39 16.6

8:39+ 16.2

8:40 15.9

8:40+ 15.3

8:41 14.5

8:41+ 14.2

8:42 14.0

8:42+ 13.6

8:43 13.2

8:43+ 12.8

8:44 12.4

8:45 12.2

8:45+ 12.0 = 2.5°

8:46 11.7

8:46+ 11.6

8:47 11.0

8:47+ 10.8

8:48 10.8

8:48+ 10.4

8:49 10.4

8:49+ 10.2

8:50 - 10.2/20

8:51 - 10.0 = 38.4°

8:51+ - 9.8

8:52 - 9.7

8:52+ - 9.6

8:53 - 9.4

8:53+ - 9.4

8:54 - 18.0/40

8:54+ - 17.6/40

8:55 - 17.3

8:56 - 16.8

8:57 - 16.6

8:57+ - 16.3

8:58 - 16.0 still as before

8:59 - 15.7 33.5°

9:00 - 15.6 full sun;

9:00+ - 15.3 some cool

9:01 - 15.2 breeze

9:02 - 15.2

9:02+ - 15.0

9:03 - 15.0

9:04 - 15.1

9:05 - 14.8

9:07 - 15.0 = 34.2°

9:09 - 15.0

9:12 - 15.4

9:15 - 15.2

9:17 - 14.8

9:22 - 15.2

9:26 - 15.4

♀ back at Pycnosphyllum #1

9:30 15.4 clear, cool breeze

9:34 Ground tyrant ran 3 ft away,

no response.

9:35 15.6

♀ still on Pycno.

9:40 15.6

This is fully exposed

to bright high sun, lying

on dead Pycnosphyllum

9:45 15.0

Tethered lizard.

9:52 - 15.8/40

9:57 16.5 perhaps cooler breeze, no noticeable change in posture.

10:03 16.1 31.9

10:09 ran 3 ft. to edge of rocks, balled.

10:11 chased or chased by mother hog owl (♂?)

10:15 AM - moved him

tethered in sun: on dirt (the tethered lizard)

10:25 - 19.3/40 29.5

10:27 - 19.2/40 29.3

10:31 - 17.7 = 29.8

10:34 - 16.9 = 31.1

10:37 - 16.2 sandy soil surface 24° 32.6

10:40 - 16.4 32.2

10:43 16.5 normal - hot. 32.1

10:44 - sprayed with Testor's flat black.

10:46 - 16.9 31.9

10:48 - ~~16.2~~ 17.2 31.5

10:49 16.9 31.9

10:51 16.3 32.4

10:52 16.0 33.0

10:54 15.6 33.4

10:56 15.5 33.5

10:58 15.2 33.7

11:00 15.3 33.7

Clear sky

over misty cloud.

Pearson, O.P.

1974

Catalogue

5090 - 5176

Peru

1974

Quebrada aqualina
3 mi N. Mollendo, 100 ft.; Dept. Arequipa, Peru
March 21

skull only
5090 ♂*Phyllotis darwini*

ficial tip of left lobe white; others pink

pipette fr. top: 2.10; lung vol. = 1.49 cc

white
testes 10 mm, SV 15
41 g. ♂ - tickssaved lungs, heart, blood smear.
tail 114, HF 25skull only
5091 ♂

" "

pipette fr. top: 2.30; lung vol = 1.69 cc

white
50.0 ♂ - testes 10 SV 10 ticks
saved lungs, heart, blood smear
Tail 119 HF 26skull only
5092

" "

pipette fr. top 1.63; lung vol. = 1.07 cc

white
40 g. testes 10 mm white, SV 10 ticks
saved lungs, heart, blood smear
Tail 125 HF 26 1/2skull only
5093

" "

pipette fr. top 2.06 foamed when cut
lung vol. = 1.45 cc43 g. testes 11 mm white, SV 16 ticks
saved lungs, heart, blood smear.
tail 110, HF 25skull only
5094 ♂

" "

pipette fr. top 1.85; lung vol. = 1.24 cc

36 g. Testes quite white, SV 14 ticks
saved lungs, heart, blood smear.
Tail 113, HF 25calibration of volume gage: 0.61 cc without lungs
fluid temp = 28°C

5095 ♂

*Mus musculus*171 x 86 x 18 x 14 testes 8, SV 9.
16.5 g.

5096 ♀

mus musculus+ 2 other *Mus* (a 12-yr male with descended testes, and a 7.5 g juv with ^{white} tail tip.
uteri brown, with scars, much mammary tissue.
204 x 107 x 13 x 23 19 g.

1 mi. E. Matarani, 600 ft.; Dept. Arequipa
March 21, caught March 20

5097 ♂

Phyllotis darwini[147] x [47] x 26 x 25 testes 9, SV 10
33 g.

+ heart + muscle in phenoxyl and blood smear

skull only
5098 ♂

" "

165 x 88 x 23 x 22 testes 4
17 g. SV 2

+ blood smear

~~5099~~

3 mi N. Mollendo again March 21

5099 ♀

*Phyllotis darwini*224 x 111 x 25 x 25 39 g. 3 fetuses left, 1 rot
15 mm CR

+ heart + phenoxyl + blood smear

1974
OP Pearson

March 22 (all caught March 21)

- 5100 ♂ Phyllotis darwini 189 x 99 x 24 x 22 19.5g. Testis 4, SV 2
+ heart + blood smear
- 5101 ♂ Phyllotis darwini 212 x 113 x 25 x 24 34. gms. testis 10; SV 13
ticks + heart + blood smear
- 5102 ♀ Phyllotis darwini - tail 104 - - 24 gms 2 ut, 1 left
vag. open; preg + heart + blood smear 13 mm CL
- 5103 ♀ Phyllotis darwini 178 x 90 x 22 x 21 19 gms
vag. closed ut. + vag white, not minimal + heart + blood smear
- 5104 ♂ Phyllotis darwini 170 x 85 x 23 x 21 17.5 gms testis 5, SV 2
+ heart + blood smear

2 mi E. Atiquipa, 1200 ft., Dept. Arequipa, Perú

March 24, 1974

- 5105 ♀ Rattus rattus 408 x 222 x 36 x 25 147 gms
vag. open nipples med. + heart + blood smear

March 25

- 5106 ♂ Calomys? sp. 700 ft. [118] x [50] x 20 x 17 9.5g.
4.5 mi. E acari, Dept. of Arequipa, Peru

March 26

- 5107 ♂ Oryzomys 306 x 150 x 32 x 26 126g. Testis 20, SV 25.
Found in shaman in arequipa. Stomach with oats + green
- 5109 ♂ Oryzomys April 13, 339 Big adult caught by Anita, kept alive until
176 x 166 x 35 x 25 136g. Testis 20 mm, SV 24 mm

8 1/2 mi. NW Bella Union, 2400 ft.; Dept. of Arequipa

March 28

- 5110 ♀ Phyllotis darwini 268 x 146 x 27 x 25 46g. Preg 3rd 2 left
1 mi. E La Planta de la Urina de Cobre acari, 1000 ft. 10 mm diam.

March 28 (caught March 27)

- 5111 ♂ Phyllotis darwini 160 x 88 x 23 x 19 12g. T 5 mm, SV 4 mm

note: full lact. + mid-preg.
preg: 2R: 2L, 10 mm diam
lactating

5112 ♀ Phyllotis

[199] × [76] × 26 × 29

52 gm

^{NNW}
8½ mi NE Bella Union, 2400 ft., Dept. Arequipa

511

March 29

5113 ♀ Ph. darwini

[230] × [119] × 26 × 25

40g, 1 emb. rt. ½ left
6 mm diam

5114 ♀

" "

263 × 138 × 25 × 26

48g, 2 emb. rt. 2 left

5115 ♂ Oryzomys green stuff in stomach 313 × 158 × 35 × 23

testis 16
SV 18
120 g.

discarded one Mus with scars, lactating

5116 ♀ Oryzomys

308 × 152 × 34 × 19 92gms
vag. open; parous

5117 ♀ Oryzomys

305 × 156 × 35 × 23 121gms
parous

skull only

5118 ♂

"

302 × 157 × 37 × - 130 g.

testis 16 mm
SV 16 mm

5119 ♀ Phyllotis darwini

243 × 128 × 24 × 28 35g. preg: 2R; 2L.

5120 ♀

"

[220] × [112] × 26 × 28

35g, pelvis not open
estrous

Discarded Mus 9g. ♂ Testis 7 SV 11

^{NNW}
8½ mi NE Bella Union, 2400 ft., Dept. Arequipa, Peru

March 30, 1974

5121 ♂ Phyllotis

heart + blood
243 × 125 × 25 × 30 48g

testis 11
SV 17

5122 ♂ Phyllotis

heart + blood
260 × 131 × 27 × 27 60g

testis 13
SV 18

5123

badly eaten - foot + lower jaw left

5124 ♂ Phyllotis darwini

273 × 141 × 27 × 28

testis 11 SV 16 caught by hand
57g. during day.

skull only

5125 ♀ Mus

152 × 78 × 17 × 14

Emb. 1 rt 2 left
12g. 9 mm CR. Pelvis close

march 31

skull only 5126 ♂ *Ph. annularis* caught I9 [179] x [84] x 23 x 22 T9 SV14 23g

5127 ♂ " " caught E9 194 x 104 x 22 x 23 19g T8 SV13

5128 ♂ " " caught I8 181 x 98 x 23 x 23 19g T8 SV12

5129 ♂ " " caught J5 ^{tagged 649} 200 x 112 x 23 x 23 21½g T8, SV11

skull only 5130 ♀ " " caught D10 ^{tagged 645} [143] x [52] x 22 x 23 24½g ^{Vag. open} Preg. 3 left 11mm CR

skull only 5131 ♀ " " caught G4 ^{tagged 650} [151] x [58] x 22 x 23 19g ^{ut. scars} lactating

skull only 5132 ♂ " " caught A8 185 x 97 x 22 x 25 17½g T7 SV13

5133 ♂ " " caught A9 197 x 103 x 22 x 24 27g T9, SV15

skull only 5134 ♂ *mus* ^{tagged 655-646} caught G10 141 x 70 x 16 x 12 10g T6, SV10

hairy tail

5135 ♂ *Phyllotis darwini* ^{tagged 653} caught H6 [225] x [95] x 28 x 29 62g T11, SV18

skull only 5136 ♂ " " caught G1 [204] x [81] x 28 x 28 52g T11 SV16

skull only 5137 ♀ " " ^{tagged 662} caught C1 [180] x [66] x 26 x 28 38g ^{vag. open} Preg. 2R; 3L 10mm diam

skull only 5138 ♂ " " ^{tagged 658} caught H2 252 x 131 x 27 x 29 48g T10; SV19

skull only 5139 ♀ " " 258 x 138 x 27 x 29 61g ^{ut. embis: 18gms together: late preg: 28mm CR} 3R, 2L

skull only 5140 ♂ " " 237 x 128 x 24 x 28 38g T10, SV19

5 mi. NW Torquedala
Cuapre - Torquedala Road, 11,400ft., Dept. of Magdalena

april 3.

5141 ♀ *Bolomys leucopneustes* 165 x 67 x ²¹23 x 13 40g ^{lactating and} 7 med. embryos

5142 ♂ " 166 x 67 x 21 x 15 37g ^{testis 10mm} SV11

skull only 5143 ♀ " 168 x 68 x 21 x 15 35g ^{lactating and late} Preg. 6 embryos

5144 ♀ *Phyllotis magister?* [267] x [128] x 29½ x 25½ 77g ^{lact., ut. scars}

skull + heart 5145 ♂ *Phyllotis darwini* no pectoral streak [198] x [87] x 24 x 24 42g testis 9, SV11

skull + heart 5146 ♂ " no pect. streak [177] x [70] x 25 x 27 53g testis 10, SV16

skull + heart 5147 ♂ " " [202] x [95] x 25 x 24 42g testis 10; SV15

skull + heart 5148 ♀ " " [183] x [72] x 25 x 25 44g ^{vag. not open} Preg. 2R; 4L 7mm diam

skull + heart 5149 ♀ " no pectoral streak [166] x [60] x 25 x 25 38g ^{lact. and} Preg. 5R; 0L embryos

skull + heart		pelage juv.; no streak		testis 7.5
5150 ♂	<i>Phyllotis darwini</i>	178 x 90 x 23 x 20	23 gm	SV 5 mm
skull + heart				uteri pink; vag. large
5151 ♀	"	pelage juv. 162 x 81 x 23 x 20	15 gm	vag not open
skull + heart + blood				some mamm. tissue
5152 ♀	"	no streak [200] x [88] x 25 x 25	36 g	uterine scars
skull + blood				
5153 ♂	"	juv., no streak 195 x 100 x 24 x 21	21 gm	testis 8, SV 4
skeleton + heart + blood				
5154 ♂	"	no streak 240 x 119 x 26 x 28	52 gm	testis 10, SV 17
skull + heart + blood				
5155 ♂	"	no streak [222] x [105] x 24 x 25	43 gm	testis 10; SV 20
skull + heart + blood				
5156 ♀	"	no streak 231 x 111 x 24 x 26	41 gm	lactating uterine scars

Barro Colorado Rd., 13,900 ft.

heart only				
5157 ♀	<i>Phyllotis darwini</i>	caught April 5, bled April 6	Brump embryo pelvis slightly open	
				226 x 114 x 26 x 25 41 g.

5158	5 mi N	<u>Lago Loricata, 15,300 ft., Dept. of Magway</u>		
skull only				
5158 ♂	<i>Ph. darwini</i>	collected in situ 230 x 110 x 27 x 26	58 g.	testis 13 SV 30
+ 2 juveniles hardly out of the nest; dead in trap.				

April 7, 1974

5 mi N Lago Loricata, 15,300 ft., Dept. of Magway

skull + heart + blood				uterus tiny
5159 ♀	<i>Ph. darwini</i>	juv.	136 x 64 x 22 x 18	13 gm
5160 ♂	"	"	146 x 71 x 23 x 19	14 gm testis 3, SV 2
5161 ♂	"	"	158 x 76 x 25 x 19	15.5 gm testis 4 SV 3
5162 ♀	"	"	136 x 63 x 23 x 18	12 gm uterus juv.
+ skull				possibly preg, one foot part in much mamm. tissue
5163 ♀	<i>Chinchillula sahamae</i>		273 x 103 x 33 x 37	130 g vag. open wings 3R:2L
+ skull				
5164 ♀	<i>Auliscomys sublinis</i>		161 x 51 x 22 x 21	39 gm vag. open preg: 3R:0L

April 8, 1974

+ skull				
5165 ♀	<i>Auliscomys boliviensis</i>		203 x 81 x 27 x 27	78 g 4 late emb.
5166 ♂	"	"	219 x 91 x 30 x 28	66 g testis 11; SV 16

May 1st, from Top 2.13

April 9

removed lungs + heart

skull only	5167 ♂	Ph. darwini	lungs, heart, blood, skull.	testis 12
			235 x 119 x 27 x 27	53 g SV 21
			This one caught yesterday, not + cold - almost dead	
			some leakage lung vol = 2.6 cc	
skull only	5168 ♂	" "	230 x 110 x 27 x 25	testis 13
				56 g SV 21
			This one escaped after overblowing, squashed, 1.19 cc	
			some leakage lung vol. from top = 1.72 lung vol = 1.19 cc	
skull only	5169 ♀	" "	226 x 105 x 28 x 25	interns with
				51 g scars
			lung vol. from top = 2.58 : lung vol = 2.05 cc	
skull only	5170 ♀	" "	221 x 102 x 27 x 27	50 g Bump embryo
			lung vol. from top = 2.17	2 rt 2 left.
			lung vol = 1.64 cc	
skull only	5171 ♀	" "	lactating + preg. fetuses 13 mm CR, 3 rt 2 left.	
			222 x 107 x 26 x 26	55 g. they weigh
			lung vol. fr. top = 2.28	2.8 g.
			lung vol = 1.75 cc	all together

16°C.
calibration of lung volume gig : 0.53 cc without lungs.

skull only	5172 ♀	Ph. darwini	Prog 3 rt 1 left, 16 mm CR	
			236 x 119 x 27 x 27	53 gm weigh
			some leakage	
			lung fr. top 2.60 : lung vol = 2.15 cc	
+ skull	5173 ♀	Ph. darwini	lactating + preg, 3 rt 3 left, 10 mm CR	
			228 x 106 x 27 x 26	42 g. 2.5 gm

8 1/2 mi NNW Bella Union, 2400 ft, Dept. D. Argentina.

caught March 31, killed April 13

+ liver + kidney + heart.	5174 ♂	Oryzomys.	352 x 181 x 36 x 25	145 g. testis 17 mm
				SV 22
+ liver + kidney + heart	5175 ♀	"	307 x 157 x 32 x 25	74 g. not preg.
+ liver + kidney + heart	5176 ♂	"	357 x 169 x 36 x 24	155 g. test 17 mm
				SV 17 mm

Pearson, O. F.

1974

Journal

Peru

Calif.

Pearson
1974

Tue.
Mar. 19.

1 mi
+ 2 mi east of Matarain, 600 ft.; Dept. arequipa, Peru

after 2 days in Tarma getting the truck licensed etc. finally left about 10:30 A.M. Lots of Zonotrichia capensis singing about the city, such as Hotel Tarma and the palace along avenida Bolognesi. Neither saw nor heard a single English sparrow. The Zonotrichias seem to have won the battle that used to be waged along Bolognesi.

Drove north to Moquegua. The sloping plain north of Tarma that was green last year in March is all dried up, but lots of miras there. Arrived Moquegua about 12:15. Post office closed, not open until 3 p.m., so we left for Mollendo. Fairly good, almost dried-up vegetation coming down into Matarain. Lots of mouse and/or lizard tracks at one place where we stopped. The lowa between Matarain and Mollendo, recommended by Robt. Hughes, is dry, almost, about as "lurid" as Muro Sana in 1973 March. Not enough rocks & shelter for mice, however, so we drove inland a couple of miles and camped at 5:30 p.m. Clear windy. I put out about 38 small Shermans baited with rolled oats. Anita put out 15 large Shermans. Soil powdery dry, a chalk quarry nearby. A few small bushes & waxy plants in bloom, a few clusters of candelabra cacti looking red.

The weather in Tarma was overcast all three nights but cleared each morning.

March 20

2 Phyllotis darwini in my traps, one of them juveniles. None in Anita's. No Zonotrichias, heard burrowing owls and I think seed snipe. No ants.

Drove into Mullendo and met Robt. Hughes, then drove south to Mejia and about 10 miles beyond looking for a good mossy loma. The swampy plain at the mouth of the Rio Tambo is impressive. Lots of egrets, ducks, shorebirds, etc, surely a tremendous area for migrating birds.

Best we could do is a steep gully half-way between Mullendo and Matarain. a good road goes down it to an abandoned installation of some sort at the beach. (But fenced, with a watchman). We camped partway down the canyon amid powdery dry soil and chalk, steep rocky slopes, and assorted green bushes down the dry wash. a bit of dry ^{Distichlis} "maritime grass", a few small dry candel cacti up in the rocks. a few lizards seen, two burrowing owls sitting out in the hot sun, and mouse tracks in the powder along the road. Wrens + doves.

Just before dusk set a complex trap line that included segments among angular boulder slides up on ~~the~~ both sides of the canyon (dried weeds + some green bushes), along the dry wash which is a narrow gully full of weeds and bushes in chalky-soil, and along a wall and among boulders on the valley floor. Lots of mouse footprints around the edge of the vegetation along the dry wash.

afternoon hot + bright sun. How can the burrowing owls sit out there and take it? a few chicks at dusk.

big + small shrews,

March 21

night clear. my 70 traps had 3 mice, (along the bushes in the gully, and 11 Phyllotis darwini.

Searson
1974



3 mi. N Mollendo, 100 ft. March 22, 1974
Quebrada Agualima.

acuta had 39 big + little shermans, mostly in the valley bottom; caught 1 warreni and 1 Phyllotis. The Phyllotis could eat care less about the vegetation at the bottom of the canyon, they liked the boulders on the slopes. all were carrying tails on wheels. Breeding males, juveniles, and a pregnant female among those dissected today.

Spent morning fleshing lungs etc, afternoon skinning. Hot and sunny. 28° in the shade at 3 P.M. Hunt 18 big shermans upon the north slope where the trucks roll down the slope.

Got a good look at a medium-large Tussonia while fleshlighting last night.

march 22

my 18 shermans in what was good Phyllotis habitat last night (up in rocks below the road shrines) caught only one mus. Night partly with thin overcast but day clear and hot. Embedded lungs and dissected in morning, then visited with Hughes in molledo. He calls our campsite Quebrada Aqualina. He said there was some rain 2 months ago which preceded a modest flowering. Apparently enough to start the mice breeding. Then drove up the hill toward Arequipa. Vegetation best at about 1500 ft. at 1820 ft among grass, yellow daisies, white everlastings, saw flocks of Zonotrichia. at 2740 m is a flat park with shrubs and cacti in the floor of the canyon along the old road best approached from the upper end of the road.

Drove until after dark and camped at 8 p.m.

in last year's campsite at 3200 ft. above Camaná.
all dried up. Saw no mine jacklighting.

March 23

Vegetation includes a thick-stemmed sorrel, not quite
dried up, and some low cylindrical cacti that look like
cav pipes from a distance. Chobani-misti-Pichupichu does
but then hazed up.

Drove north to Atiquipa, numerous cordons. Numerous
conversations with assorted people who seemed knowledgeable
indicate that Atiquipa was unusually lush last year, with
rains lasting all the way up into April. Hence our
green photo from last year was at a season when
things ordinarily would be dry. This year is unusual
also because of some rains about 2 ^{months} ~~years~~ ago. Everyone
agrees that last year there occurred a spectacular
outbreak of rats, which destroyed much of the harvest.
all agree that they were ^{much} bigger than the *Phyllotis darwini*
on our pinning board.

We camped up the valley about 2 miles east of
Atiquipa, 1200 ft. Olives, fruit trees, and other crops
near the stream. The hills fairly green with knee-high
to waist-high bushes, mostly *Grudelia* in full bloom,
but several other species mixed in, all heavily grazed
by cows + goats. A sprinkling of trees about 12 feet
tall: a big-leaved one with milky sap locally called
Platanilla, a legume with fairly large leaflets and rose-
like thorns and broad orange pods 3 or 4 inches long, and
another finer-leaved legume with very long thorns.
also clumps of tall *Cereus* cactus (blooming) frequently

Jearson
1974



2 mi. E Atiquipa, 1200 ft. March 24, 1974

supported by trees.

Very few reeds. just before docks I put out 18 big Shermans at good holes at the base of trees and cactus in a sea of Grindelia. also 16 large Shermans along a stone wall around an olive grove which was a sea of waist-high weeds. Anita put 20 traps along the gully in Grindelia latifolia.

Zonotrichia in flocks of a dozen, but heard song twice (maybe same individual). Crimson flycatcher, 2 size doves, burrowing owls, small hummer, heard Petronia, sparrow hawk, heard horn owl. There are said to be tinamous.

March 24

light warm, clear, dew on car but bushes dry. Only captures were 3 large Rattus rattus along the stone wall around the olives. a parous ♀ and breeding males.

Boves at 2 burrowing owl holes revealed abaddon, moose, Oryzomys?, Mus, and a quite small creature such as Phyllotis amicus.

Other plants common are a small tobacco that they call tobacilla. The flowers of the legume tree are very sticky, arranged in spikes like buckeye but smaller, have a fancy yellow tongue with red design, stamens poised above it.

Set 40 small Shermans about 11 a.m. in the weedy ~~pasture~~ olive grove, some near the brook, others along wall about 30 yds from brook. a few in lush green grass, and some in or taller lambs-ear grass.

March 25

2 mi. E. Atlix. Evening cloudy but clear before A.M. Dew on grass so that few Bidens stuck. much dew on car.

Traps: forgot to mention 20 museum specials baited with corn meal or locow set in Grindelia yesterday's trap line, at base of cañon etc. Anita set 30 museum specials along wall in another olive grove, among weeds.

Caught nothing in the Grindelia; in my small Shermans near stream etc 3 mus and 1 young Rattus.

Anita caught 1 $\frac{2}{3}$ -grown Rattus, and 1 very small Calomys?, The latter in a weedy place. 80% of her snap traps were sprung.

Left about 8 and drove north to the [Rio Tamas
Rio Acari] and up it to between Acari* and ^(UMAROTE) Minas de Colre. a series of hitchhikers gave us assorted information. Two boys

* a short way above Chocavento said there was a rat outbreak in December but that they have all disappeared. They said a famous ratada occurred in 1960. There was no way to get rid of them except to catch one, put it in a cage, and then the people had a special mass (misa) and the rats all went away.

Camped in willows etc on the edge of a marshy place near the river. Lots of cotton fields, olive orchards, corn fields, bean fields etc irrigated nearby. Couldn't put out traps until 5:30 because so many birds, warblers, etc, but just before dark managed to get out between the two of us about 50 large Shermans, 5 small Shermans and a dozen snap traps. Some along mud walks + pepper trees, some long piles of ^{dead} cotton branches, some in dry or damp irrigation ditches.

Lots of birds around our camp in a meadow: mocking

birds, ants, flycatchers of several kinds, several rails (which vocalized frequently), and singing Zenotrichia. They often sing from perches on top of 5-foot high cotton plants well out in the fields.

Road was paved to acari - a surprise, but poor stone acari.

March 26 $4\frac{1}{2}$ mi. E. acari, 700 ft. Night clear, no mosquitos. Dew.

Trope caught 4 mus and 2 rats: 1 of them in a conspicuous hole in mudbank and 1 drowned in a trap that had been set in an irrigation ditch. They were so big and rattlike that only after much puzzling did I decide they were Oryzomys.

Only 2 weeks ago the river had risen many feet and covered much of the bottom below the fields.

Drove up the Valley in the morning to about 5 miles above Umanote and spent the day in a grove of willows near the river ^{at 1200 ft}. Pure desert on either side of the irrigated strip along the river, but Tillandsia high up on the ridges on either side of the valley. Hot. Then drove down the valley to 1 mi E La Planta de la Mina de Chile acari and set scores of traps along good stone walls at edges of drying old alfalfa, pepper trees etc, abandoned fields, and green tall grass near the river, night clear.

March 27

Trope held only 1 mus, 1 Phyllotis darwini, and 1 small Phyllotis still in live trap. The Zenotrichia at $4\frac{1}{2}$ mi E. acari were singing "Good morning chick", or occasionally the "chick" had a little roll. The Zenotrichia at La Planta had a slight roll.

Left for Bella Umanote thinking to go to

Pearson
1974

Puerto Iruya but were lured onto a dirt road ~~to~~ NE up into the Cerros de Chocoverta, taking off a few miles north of Bella Union. After several miles we suddenly encountered a wide paved road (transverse to ours) with a center stripe, curve signs etc. Apparently it is completely abandoned and was converted to a now defunct and dismantled mine. We took the right branch past abandoned foundations and deteriorating roads and finally ended in a beautiful valley filled with 5 ft high clumps of columnar cactus (a forest), flowering tomatoes, assorted other flowers, lots of grass some still green, and dead stalks looking like *Cuminum* stalks as much as 9 ft tall. ~~We camped~~ no signs of grazing, no people for miles. The vegetation definitely on the dry side but still quite a few flowers.

We camped at 2400 ft. on the north-west side of the valley across from a mine-dump RR track that comes straight down the hill to a loading platform. A big mining excavation can be seen up above. ^{one of our maps shows a Cerro Campana 1678m nearby,} probably across the valley from us.

Set out a 10 x 10 grid with 10 yard spacing and set Shermans baited with cats, every station around the periphery and every other station on the middle lines. Two large Shermans followed by one small.

The *Zenaidura* here are singing "seed worn"

Pearson
1974



8 $\frac{1}{2}$ mi. NW Bella Union, 2400 ft. study area,
March 27, 1974

Churr". Lots of roll on the last, almost separate notes.

Hummingbirds nesting.

Fog lowered onto Cerro Campana at about 4:30 and lifted next morning.

Forgot to mention Zonotrichia singing in the town of Acari and saw English sparrows there also.

March 28

No early bird chorus. Had been a little dew drip off of car but it was dry at daybreak and grass & weeds dry, but a tuft of dactyon fluff marking a trap was covered with dew drops. Foggy, but soon clearing.

Anta line of about 50 snaptraps caught 2 mus and 1 big/pregnant female Phyllotis darwini. Lots of her traps sprung & empty.

Bird caught only:

#645 A8 Ph. dar ♀ vog. open, tail short

#646 H6 mus ♂ ad.

#649 J2 Phyllotis dar ♂ ad.

Saw a big Oryzomys several times yesterday and this morning 50 ft. from the tent in a pile of stones & cactus. Another about 300 yds down the road. Set numerous big Shermans for them but they don't seem to go in them. While jacklighting, this second guy charged down his runway, bumped into the back end of a Sherman, thereby springing it, and escaped.

Filled in the rest of my grid with small Shermans, so now a trap at each station except the three where mice were caught last night. Anta added

the three rat traps to her line.

The cloud layer about 150 ft above us at 4:30 but had dissipated by 6 pm. Evening clear, moonish moon.

March 29

morning overcast, dew on car but no drip, no moisture on my 1-g dacron sample, not enough dew on grass + weeds to wet pants.

Ant's line had ⁵ big *Oryzomys*, 1 *Mus*, and 3 *Phyllotis darwini*. my 5 big *Spermomys* around the *Oryz* down the road, 8 big *Spermomys* around ruined stone huts near the old workers' houses, and 2 near the *Oryz* at our tent caught 1 *Mus*.

On the grid:

(# 649) repeat H2 Ph. dar.

650 G3 Ph. dar? small ♀ inf-mat.

652 B5 " " " ♀ veg-open, (prob-preg).

(645) repeat A9 " " " ♀ Veg-open.

653 E9 Ph-dar. huge ♂

(646) repeat G10 *Mus*

Several of these *Phyllotomus* seem to have shorter tails, less fluffy fur than the *Ph. dar. leucatus* caught on Ant's line and in the Acari valley, and the huge ♂ is the biggest *darwini* I ever saw - if it is *darwini*. Will save them all on last night of trapping.

Shermed in A.M. Everybody, pregnant + adult. why? would expect this to be the end of the breeding

season.

Hiked up to a greener - looking patch about 1500 ft above camp to set traps, but conditions not all that different, so set none. The grasses were greener, and a few flowers were blooming that we have not seen down here (a cucumber one, a large white morning-glory-like flower, a parasite *Eriosema*?, etc., but ground dry dry. Got horn owl pellets under the bottom of the mine transect stops.

March 30

Just before getting after supper Anita saw 2 mice.

Night was mostly clear, dew on car but no drip.

Day all clear. Temp at noon breezy sunny 25°.

Grid as follows:

654 I9 Ph.d. small ad. ♀ vag. open.

(653) I7 Huge Ph.d.

(646) = 655 E7 mus

(645) B7 Ph.d.

656 A6 mus ad ♂

658 I6 Big long-tailed fluffy Ph.d. ♂

(650) H4 smallish ♀

(649) I3 Ph.d. small

659 E3 small breeding ♂, short tail not hairy

660 H1 mus ad ♂

662 E2 Big fluffy darwinii, vag. open, tail broke.

Caught nothing in the big shermans at the

two Oryzomys dens. Our test Oryz. near the tent seems to eat oatmeal, watermelon, apple, cheese, + bacon - but won't go into traps to get them.

Before lunch we built a scrap roofing corral and tore apart the rocks + cacti near the tent - nada.

Then another one where we disturbed an Oryz. from his shredded Ephedra nest under a cactus branch. He ran more central, then to another clump, and we finally caught him by hand along the tin corral.

A similar attempt with another mouse, after several mad scrambles, netted a big ♂ Phyllotis.

6 cows at lunch moved up the valley onto the grid.

March 31

night + morning clear, dew on car. Antas live traps had 2 Ph. darwini, snap traps had 3 darwini and 2 amicius. She found a mummy of what looks like akodon. My grid as follows:

Day 4 - E8 - wet Oryzomys, probably caught during day yesterday and cooked in sun; still alive but groggy.

X0 - another Oryzomys, location not recorded.

I9 - Ph. amicius ♂ 5126 breeding ♂

E9 - " " " 5127 " "

I8 - " " " 5128 " "

(649) J5 " " " 5129 " "

(645) D10 " " ♀ 5130 preg.

(650) G4 " " ♀ 5131 lact.

Pearson
1974

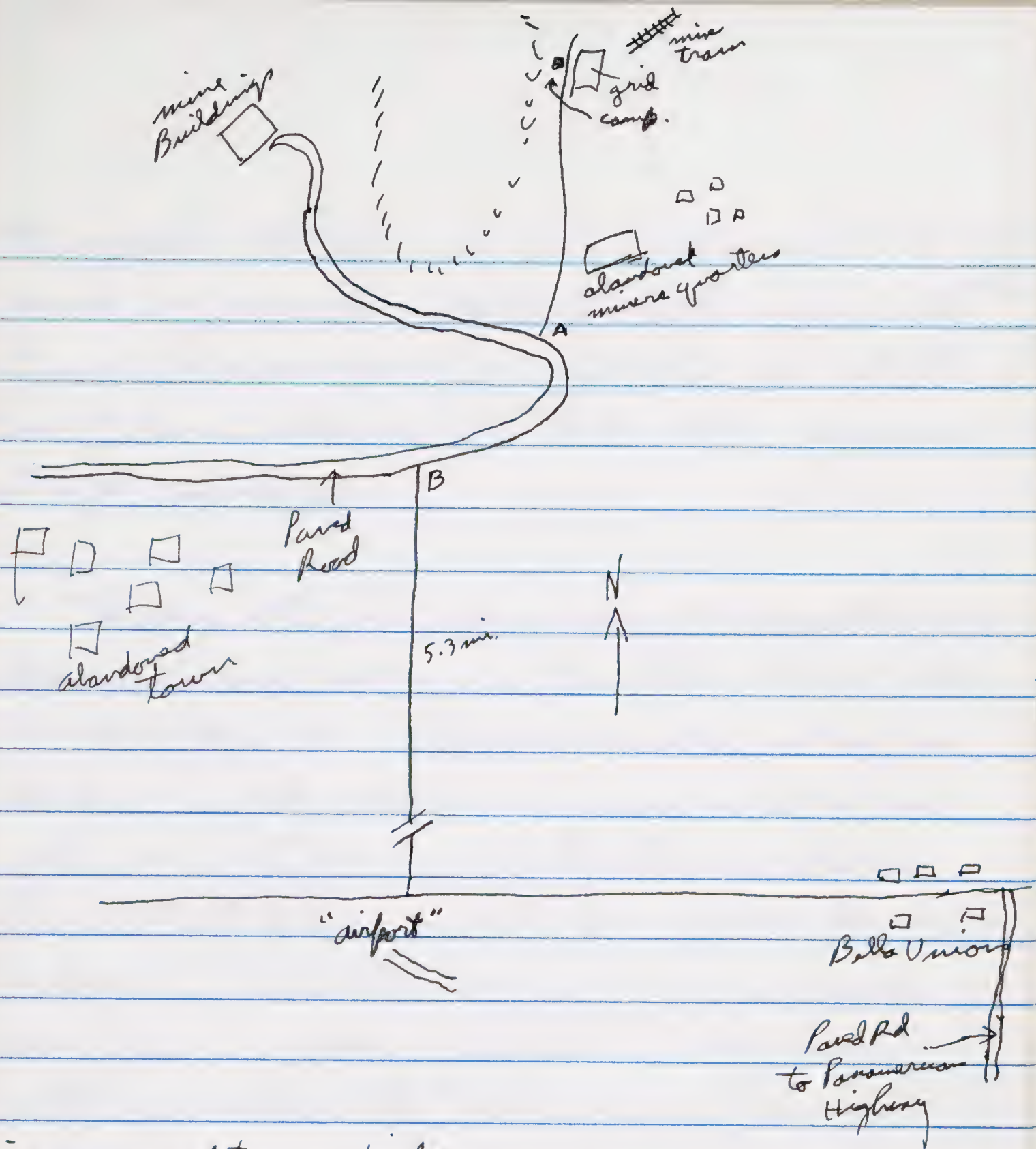
	A8	Ph. amicus	♂	breeding	5132
	A9	"	"	"	5133
(655-646)	G10	mus	♂	breeding	5134
(653)	H6	Ph. darwini	large ♂	"	5135
	G1	"	"	♂ breeding	5136
(662)	C1	"	"	♀ preg	5137
(658)	H2	"	"	♂ breeding	5138

The amicus tended to be caught at the grassier sites along rows A, B + C (check this), and the darwini in the more open, rocky bottom of the dry wash, but infrequently at the bottoms of cacti clumps that looked good for Oryzomys, as though Oryz was keeping them away from their choice-looking sites. Oryz was undoubtedly abundant on the grid but didn't enter traps until the 4th night, and never entered live traps elsewhere despite abundant opportunity.

Left after lunch. Saw fox at close range on the way out to Bella Union. It was the size of a house cat and probably hunting lizards which were very abundant in the flat coahuila but not around camp or on the grid.

Some triangulation on the Hoja de Ruta map of the auto club suggests that this campsite is $8\frac{1}{2}$ mi. VNW of Bella Union and was known as the Mina de Hierro area. It closed down about 6 years ago. We drove through the abandoned headquarters village, with school, basketball court etc, and saw nobody. There was an Inca watchman at

Pearson
1974



Distances: camp to A = 1.1 miles

A to B = 1.4 miles, B to airport = 5.3 mi.

airport to center of Bella Union = 4.6 mi.

the plant ("mine buildings above), stopped at a chacra in Bella Union and talked with an intelligent 20-yr. resident. He said last year was a wet year with great vegetation in the loma - and with a plague of rats at his chacra, where they destroyed crops etc. He said the ones they killed were all males. He thinks they breed up in the loma and invade from there. He is separated from loma by about 2 miles of absolute desert. He gets irrigation water from the acari valley. He says

the vegetation this year is fairly good, and that it rained in December. rains are quite unpredictable, however. He said usually they get their rain at the time of Sierra storms (Dec-Feb), not in synchrony with the coastal fogs.

The flora in the two valleys was quite different. Ours had a forest of casti, but none in the valley to the west where the mine buildings were. No trees in our valley and very few elsewhere. In spite of the 6 cows, grazing insect in our valley was negligible - practically the only place in Peru about which I can say that. Lots of grasses. Ground cover 50 to 100%. The tomatoes were most spectacular, then an orange flowered spreading "columbine" in large clumps and white ever-lasting. Tallest casti were 14 ft; the usual, 5 to 6 ft. They have 6, 7, 8, or 11 flutes, all with 3" diam blossoms white or crimson. Also a smaller tubular cactus with deep red blossoms and a smallish one with almost-spherical joints.

Valley was loaded with large raptors - butors and bigger; a falcon slightly larger than sparrow hawk, sparrow hawk; 3 or more *Speotyto* (eating insects only), 2 or more barn owls every night; a capped myiarchid; hummingbirds nesting, wrens abundant, *Phrygilus alaudinus* surging in air and feeding young; *Eupelia* plus a "mourning dove", a small almost-black flycatcher, mocking birds, a flock of brown icterids, *Zonotrichia* singing with lots of trill on last note. Parakeets. Swifts. many others. But no early morning bird chorus.

Pearson
1974

March 31 (Sat) This is the "best" loma I have seen. It is not wet & druffy like some of those in central Peru in August[±], it does not have the trees of Atriquipa and probably not as reliable moisture, but Atriquipa is so heavily grazed that ~~only~~ the northern *Grindelia* dominates. Bella Unión has much grass, a variety of flowers, cactus. I doubt that it has the big yellow lilies of Papa Leon etc. What saves it from the fate of Atriquipa is the absence of a stream. When a stream is present, people use it for irrigation which (a) keeps the human population high and (b) keeps the livestock high. When the loma is all eaten out, they take the ~~cattle~~ ^{cattle}, burros, horses, sheep, and goats a handful of alfalfa or weeds (alternatives/prey) to keep them going until a spring of grass appears in the loma. Then they take their herds up into the hills for the day.

Drove south and camped after dark at Atico. When passing Atriquipa I noticed two nice valleys just north, with lots of trees. The more northerly of the two had a road going up into it, apparently into the trees.

April 1

Drove most of day and arrived Moquegua 4:30 p.m. Supper, then up the Cuzco-Moquegua road to a campsite, no place to get off the road until ^{about} 12,700 ft (Altitude had said 1500 ft at Moquegua), so we parked at side of road (very broad road). Yunque minor. Night clear.

April 2

Morning clear. Frost on sleeping bag. Vegetation a mixture of tola, weeds (mini-pod) and cactus. Drove up to a benchmark (4048 m) to spend day ^(Quinta) but sirocco

hit aintor, so back down to a meadow at about
→ 12,000ft ± just off of the Crajone-Togrefenla road. Spent
the day there, set traps among boulder talus below the
road: bushes, tola, weeds, some grass but not bunchgrass
(4048 m wasatola + ichu). In spite of the abundance of
Lepidophyllum + *Sesuvio* bushes, the absence of bunchgrass
and abundance of minimised and other such little annuals
makes this seem lower than altiplano. The dominant
animal is thousands of woolly caterpillars crawling everywhere.

April 3 Night cloudy + warmer; morning all cloudy. We had about
50 museum specials and 24 small Shermans out and caught
3 *Bolomys berlepschi*, 1 *Ph. magister*, and 12 *Ph. darwini*.
Most of the *darwini* had truncated tails. Everybody pregnant.

Left about noon and grand up the hill, following signs
to Luno, but horrible road and no other cars on it. Eventually
got to Lago Sucke.

altimeter checks: at benchmark 4048 m altimeter said 12,800 ft.
a benchmark at Lago Sucke said 4451 m, altimeter
said 14,140.

Here: altimeter is reading 550 ft. too low.

When we made camp altimeter read 13,380 = 13,930
Came past our old two camps, then on a new road,
helpfully toward Santa Rosa but queer side, saw no
tinamous, no vicuñas, no rheas. Camped along a
stream and *Baccharis*, *Lepidophyllum*, *Festuca*,
and yareta. Cloudy all day.

April 4 Morning mostly clear, afternoon all cloudy. Spent
the day dissecting and pellets and manufacturing

RBCs. Had 17 small Shermans out all day, but caught nothing. Saw a ♀ Oretrichilus standing on the ground at Voltrich blossoms. Seed suifer, but heard no tinamou. Quite sterile area. We are along a stream at 13,900 ft. between Lago Siche and Lago Lirio.

April 5 night overcast, clearing toward morning. Frost on windshield but not on car. morning partly cloudy, afternoon cloudy.

Drove about 10 miles, then discovered from roadscaper that we were on the Condorine Road, so turned around and headed for Santa Rosa. Turned back the Caccachara road just over the divide from Santa Rosa and drove back to our old Viscocha camp. Road just as awful as ever. The Caccachara Valley was full of alpacas and sheep. Hundreds of them, and a thatched hut. Decided not to stay there, so drove back almost to the turn off the main road and camped in a wilderness valley. about 5 mi E of Lago Lirio, 15,250 ft. Put out about 65 large + small Shermans baited with rolled oats, along stone walls. Saw Andis, bolivensis. Saw one band of Vicunas between here and Caccachara: one male with a band of 10 that included at least 2 young.

Started to snow - but just before dark, and off and on all night. Full moon was bright through the clouds, so the mice did snow out moonlight. Poor part of trapline at 1 AM, but nothing. Warm + still.

April 6

Morning cloudy, about 2" of snow on ground, and occasional other flurries of grains until about 11 a.m. Sun & scattered clouds after about 2 p.m., then evening cold after sunset.

My trapline above camp had 2 dead baby *Phyllotis* hardly big enough to be out of the nest, and 2 old adults, alive, but one of them later cooked in the sun. The traps around the corral across the valley were untouched. Moved them to the unoccupied huts, another corral, some new traps in another rock outcrop up the road, and expanded my line in the rocks above camp. Ants has about 20 in rocks above camp. Total about 90.

Saw several tinamous, heard them in A.M. but not evening, saw two, *Andiscomys boliviensis* near camp learning to like watermelon (he was badly startled at first sniff, then gradually accepted it). Several others went near camp. A *Geococcyx* *multiformis* grabbed a piece of watermelon slipped to him, chewed it, then spat it out.

Evening cold & clear. all snow gone in valley except in shade of car. Just about dark a fireball dropped about 2", another flurry or two during the night.

April 7

2" of snow in A.M., cloudy. My traps at the unoccupied huts had 1 *Chinchilla* and 1 *Andiscomys sublineatus*, neither actually in a house, a small corral live nothing. a small rocky tongue nothing. at 1 a.m. the original

rock wall line had 1 adult Ph. darwini, and ~~at 7 a.m.~~
~~it had~~ 2 baby Ph.-d., at 7 a.m., another adult and
two more babies.

Put out ~~reset~~ more traps for darwini.

Sots of Tuanotus singing and trache in the snow.
Have seen duas twice, no trias.

Glacial polish on bed rock, strata aiming WSW.
a few sprinkles of hail during day, scattered clouds in
afternoon, more cloudy than sunny.

April 8

Night was clear for a time, heavy frost, then haze and
clouds, skin of ice. Traps in middle of night caught 2 more
young darwini and a Ph. boliviensis, in the morning 2 more
Ph. boliviensis and a big toad.

yesterday afternoon a herd of several hundred llamas,
alpacas, and sheep grazed up the valley and moved
into the unoccupied huts & camped across the valley.
The 4 men promptly found several of my traps, so I
walked over to talk with them, and reset them.
This morning the livestock moved into the valley again.
With the 4 men came a horse, 3 donkeys, and 3 adult
chickens (1 ♂ 2 ♀). Yesterday was the first day clear enough
to see sunrise & sunset, and it appears that we are north
of Lago Titicaca, something like 5-10 miles.

Sots of traps out for darwini, and (hr) of darkness
before the men came off, but hauled during half of
this dark period.

April 9

Have part of trapline at midnight: 1 adult
Phyllotis - partly clear. Morning mostly clear,

two more adult darwini and two juveniles of less than 20g. Released them, as well as two others caught earlier.

Day mostly sunny until noon, then scattered clouds and occasional hail.

The shepherd across the valley came to see us on his ^{or his people} ~~enjoyment~~; Pedro García Nina. He calls this station Punta Perdida. He says the ~~llamas~~, alpacas belong to a sort of cooperative, the llamas and sheep are his. Every night the ~~llamas~~ ^{llamas} are herded into the vicinity of the corral but are not forced to enter it. In the morning, however, they are confined in the corral for an hour or more - to prevent them from grazing too far away during the day. It is 2500 ft, here here.

This morning saw and heard two male vicuñas having a fight - close up the valley on the east side. Saw footprints, but haven't seen them yet. Have seen many ^{hummingbirds} ~~hummingbirds~~ twice, on the ground or perching in low talls or on rocks. They have no Chuguiros for many miles. Big Sialias are out when it is warm. Have crossed the marsh many times, with its myriad ponds & puddles & reeds but have seen no frogs or toads there (nor heard them). Caught 1 Bufo in a trap, and today saw a little yellow-footed one walking about. Saw 1 condor and 2 eagles soaring overhead this afternoon.

Pearson
1974

Spent the day processing mouse traps.

Left out one trap line consisting of about 40 large shermans and some small shermans.

April 10

Almost no snow during night. Nothing in traps. The local shepherds, Pedro Soria, call this location Punta Lechida, mail address Mazocruz. He asked if he could have a live trap so he could get mouse or rat blood to drink (for medicinal purposes).

Left about 10 am, drove to Santa Rosa and Mazocruz (where there was no gasoline), then to the acequia camp above Tarata. Saw one band of vicuñas at an agric. school place between Mazocruz and Veluta, and a "herd" of 4? rheas on Lampa de Capazo. Stopped and took photo at our lizard camp near Challapalca. Tola camp and yareta camp looked same as 1971, Queñua and acequia camps definitely greener. Cantua not blooming, so no Patagona and few other hummers.

April 11

Dried + packed. Stopped to visit in Tarata, then to Tarma where we arrived in mid-afternoon. Rock camp about same as in 1971, but some green anisak at lower altitude than in 1971.

Unlike a month ago, the promenade on Avenida Bolívar in Tarma was full of English sparrows, and no no zonotrichias. A few patches of zonotrichia song elsewhere, but nothing like last month.

Pearson
1974

"Peru"

Sept. 4

a letter from Manuel Plenge enclosing newspaper clippings dated August 24 notes a remarkable and widespread snowstorm from Iquitos to above Lima. The pass at Livina closed by snow, ditto the road from Lima to Tarma, Iquitos airport closed for 5 days due to rain, fog, snow, hail & ice, snow down to Casapalca, Tarma blocked for 2 days, Cayllash -20°C , Arequipa -7°C , and a thunderstorm in Tacna.

Pearson
1974

Hastings Reservation

July 9

With Phil Meyers put out the Calhoun Traps at about 4 p.m. baited with peanut butter. Weather was drizzly and considerable rain had already fallen. Almost no mouse sign. Saw bobcat at bottom of meadow on School Hill. Chamise in bloom.

July 10

Drizzle in early part of evening, but clear after midnight, moon slightly past full. Ran traps at 7 a.m., grass + chaparral soaking wet. Saw bobcat in the trap-line meadow. See summary for catch.

Drove to Mission San Antonio in Plover in middle of day, rebaited at 4:30 p.m. Day sunny and cool.

	July 10		July 11		July 12
	am	pm	a.m.	p.m.	a.m.
Chaparral	1 neotoma 3 boylii 1 trusii 1 br. towhee 1 wren 1 wren tit	1 lizard tail (white tail)	4 pin. calb. 1 boylii 1 trusii 1 wren	1 wren 1 wren tit	3 pin. trusii 1 wren 1 wren tit
Meadow	1 microtus 1 Reithro 4 manic.		2 manic 1 Reithro	1 microtus	4 manic 2 Reithro
Oak.	1 boylii?		1 trusii	1 yg chick sparrow	

July 11

~~chaparral~~ night clear + cold ($< 40^{\circ}$). Heavy dew. Ran traps at 7 a.m. ~~meadow~~ then visited Jimmy Bell's ranch. Rebaited traps in P.M. Day clear + cool.

July 12

Night cold + clear. Picked up traps 6:30 a.m.

Parson
1974

Hastings Reservation, Monterey Co, Calif.

Sept. 1+2

To Hastings with Anita, Ali, and Betty Bolin. made wire baskets to replace the disintegrated plastic garbage cans and hung them on the same steel parts as the garbage cans. Then added plastic bags inside them. after hanging, 2 diameters measured on each of seven baskets varied from 18" to 20", average of 14 diameters on 7 baskets was 19.02 inches.

There are now 30 baskets (there were 30 plastic garbage cans previously). also, 8 basket sites were skipped because there were no oaks overhead; these are considered to be hypothetical baskets, hence 38 baskets of 19.02" diam. = $59.7532 \text{ in}^2 \times 38 = 2,270.62 \text{ in}^2$ of sampling surface. I have ignored one site near the middle of the line where there should be a post, but isn't. There were no acorns overhead at this site.

Elsewhere on the reservation some of the oaks are dropping with acorns this year. along this trap line there are a few acorns, but not many. a few, alas, have already fallen, also.

Oct. 30

To Hastings with Dave Requery and Ken
Emptied the acorn bags and got 32 nuts which weighed 45.6g. fresh or 30.3g after drying several weeks.

Pearson
1974

Hastings Reservation

Dec. 12 To Hastings with Patton. about 3 PM (overcast) set the oak and meadow lines and he set the chaparral line; museum specials and peanut butter. I saw only 3 good runways in the meadow (traps at one of them) and 2 runways in the oaks (traps at one of them - Evening ~~Scotch~~ ~~shot~~ mist + drizzly but cleared later at night.

Dec. 13 Ice on car. all day clear. Chaparral traps at 7:30 AM had 2 Reithro, 6 trui, 1 Pinus colif, 3 Dipos, and 1 Taricha. Oak line had 1 Reithro. meadow line 10 maniculatus and 1 Reithro. In PM chaparral line had 1 sage sparrow, 2 weaver tits, and 1 golden crown.

Saw 2 smallish Sceloporus.

Dec. 14 night clear, light frost. In AM chaparral line had 6 trui, 1 Reithro, 1 Pinus colif. Oak line had 2 microtus sic. meadow line had 5 maniculatus and 1 Reithro.

Picked up traps in morning, covering all of the trap lines and the paths to them from the tame house; about 2-3 gallons, some of them very fresh but mostly quite old, surely month old. Saw a bobcat on Haystack Hill out in the grass. Found a dead mole with head eaten off. all 3 species of Peromyscus seem to have acorns in stomachs.

The acorn "buckets" yesterday had about 5 more acorns in them. One of them had been everted by the wind - but still contained an acorn.

Chaparral traps in PM had 1 brown towhee. Found a mouse-eaten valley-oak acorn at station 24 in the chaparral, which is about as far in as you can get,

and a long way from any oak (probably >100 yds).

Dec. 15

night overcast. Chaparral held 4 Truei, 2 Reithro, 2 Pinus calif, 1 Perognathus. meadow held 3 Reithro, and 5 maniculatus. Oaks held 2 Reithro and 1 microtus.

Total catch for 3 nights:

<u>Chaparral</u>	<u>meadow</u>	<u>Oak Woodland</u>
16 <u>Truei</u>	20 <u>maniculatus</u>	3 <u>Reithro</u>
5 <u>Reithro</u>	5 <u>Reithro</u>	3 <u>microtus</u>
4 <u>Pinus calif</u>		
3 <u>Dipso</u>		
1 <u>Perognathus</u>		

Collected some acorns in the morning. Saw young mountain lion tracks at the new water tank above the Hastings Cabin.

The new collection of acorns consisted of 8 acorns, 5 of them small, and after 3 weeks of oven + air drying weighed 7.9g. This gives a total for the year of 40 acorns of dry weight 38.2g, which is by far the biggest harvest so far.

Pearson, O. P.

1975

catalogue

#5178 - 5184

Journal

Peru

#5177 - Calif

5176 1975

Hastings Reservation, Monterey Co., Calif.
May 30, 1975

given to ~~shotaro~~
5177 ♂ *Dipodomys*

chaparral line 75-26. To ~~shotaro~~
277 x 150 x 47 x 21 87.3g.

Reardon
1975

Catalog

Peru

3,500m.

3.2 km. NE Tarata, 11,500 ft., Dept. Tacna, Peru

Nov. 22, 1975

5178 ♂ *Phyllotis magister*

testis 10mm, SV 12mm
277 x 144 x 32 x 27 62g.

5179 ♀ " *darwini*

testis 9, SV 21
224 x 111 x 26 x 26 36g.

1 km E Challapalea, Dept. Puno, 4,300m
4,000m

Nov. 24

5180 ♂ *Auliscomys sublimis*

144 x 44 x 21 x 20 - testes large

5181 ♂ *Bolomys berlepschi*

165 x 69 x 21 x 14 Testis 10mm

Pampa de Anconasa, 4,300 m., Dept. of Puno

Nov. 28

5182 ♀ *Auliscomys sublimis*

142 x 40 x 21 x 21 32g. no emb.

NOV

Nov. 29

5183 ♂ *Elgnodonta typhus*

test 8mm
164 x 71 x 25 x 19 21g.

5184 *Ctenomys furvus*

294 x 84 x 43 x 7 360g

1975

Hastings Reservation

may 29 To Hastings with angel Spotted. Arrived 3 PM, PDT sunny & warm. Oaks still green under oaks but dry or almost dry elsewhere. Set all 3 Calhoun lines. Adenostoma not quite in bloom. Is spreading outward (by growth of existing bushes, few seedlings), a few holes and runways along the meadow line but none really super. Griffin has been harvesting grass plots in this meadow and seeing numerous Microtus there. Davison, Griffin, and Keete all say lots of Peromyscus in houses. Oak line with a few interesting holes.

may 30 Night clear, light dew. Ran traps 5:30-8:00 PDT. Lots of trui & Californicus in chaparral, nothing in oaks, no Reithro or Microtus. Day sunny and warm. No birds in traps during the day (or mice). Picked up carnivore droppings on the chaparral line, a fair number but none fresh, mostly quite old but since December when I picked them up on previous census. No carnivore tracks on the road. Bradford arrived PM.

may 31 Night clear, trace dew. Ran traps 6-8 AM. See summary, especially Oak with Perognathus, trui, and Californicus. It seems to be a year of Lusius californicus. Still no Microtus. Have seen a kite both evenings. Day sunny and warm.

Picked up scats on rest of lines.

june 1 Night clear at first, then scattered local fog. Some dew. Ran traps 5:30 a.m. For summary see Sept p. Saw no carnivore tracks but heard 1 fox.

1975

May - June summary

<u>chaparral</u>			<u>meadow</u>			<u>oak</u>		
5/30	5/31	6/1	5/30	5/31	6/1	5/30	5/31	6/1

P. manic.			1	one	11	11		
P. truei				0	1		0	11
P. Calif.							0	1
Diplo.	1							
Perognathus							0	1
Sceloporus								1
Wren tit		11						
Hooded lizard		1						
Cnemidophorus		1						

Total 5 manic, 30 truei, 19 californiens, 1 Diplo, 1 Perognathus

season
1975
Peru

Quebrado de las Huéscaras, east of San Bartolo,
Dept. of Lima, Peru

Nov. 15

Took a colectivo south and got off at Sta. Maria and walked back across the desert to our quebrada of the geckos. On the east side of the freeway about halfway between the Sta. Maria turnoff and the turnoff for our Quebrado there were about 8 or 10 large terns ^{circling} flying overhead, several of them carrying minnows and some of them dive-bombed me. Looked for nests but saw none.

The quebrada is quite dry, the pepper trees pretty scraggly, but some in bloom and some other dry-weather bushes blooming. Saw several hummers of 2 species: a large one with long curved bill and dark collar, and a very small greenish & brownish one.

I don't think there are any new seed flows. Camped at our usual place about 3 or 4 miles up the valley. Some of the mini-Tillandsia in bloom, the Passiflora fruits lavender. The big Tillandsia plants on the south side of the valley look rather dry with partially rolled leaves, but they are in full bloom. The spikes orange, as I had expected, but the ^{petals} blooms quite purple. While I strolled through, the tiny hummer was feeding on them (the Passiflora)*, and also a ^{big} black fuzzy bee-fly. These flies are also working on a bush in bloom in the dry wash.

* stripe on side of head, white band on tip of tail feathers

Concerning the wasp-gecko food-chain, camp was near some blooming bushes in the dry wash, and flies,

Pearson
1975

and moths were abundant, plus two or more of the big orange-brown wasps. These walked over the flowering branches, but seemed more interested in me than in anything else. Certainly were not hunting insects. Walked for several hours looking for wasps digging holes, or for geckos, but found none.

Cloudy up until noon, then clear sun until about 3, then partly cloudy.

Saw 1 set of mouse tracks, 1/2 pr. of Mus mus, numerous fox and Burhinus tracks.

About 8 p.m. (moon almost full, partly cloudy) jack-lighted for about 1/2 hr but saw only 1 small scorpion (up on the ~~soft~~ ^{soft} mesquite).

Nov. 16

Morning cloudy. No dew. Hiked out to between San Bartolo and Punta Negra where I flagged a micro bus. Saw no lizards, one sparrow hawk.

Tarma

Nov. 21

Left Tarma ^{with Tony Guscombe} about noon and drove to Tarata. Stopped to see Sofia, gasoline, then up to the acacia camp where I put out 22 large Sherman's baited with rolled oats. Some Cantua flowering and some Grudelia, but everything pretty dry. Moon slightly past full.

3.2 km NE Tarata, 3,500 m.

Nov. 22

Night partly cloudy, water buckets with 1/2 inch ice. Thermometer at daybreak 32°F. Traps held 3 Phyllotis darwini and 1 Pt. major, a good informant yesterday (hitch-hiking army) pointed out bat caves near Tarata.

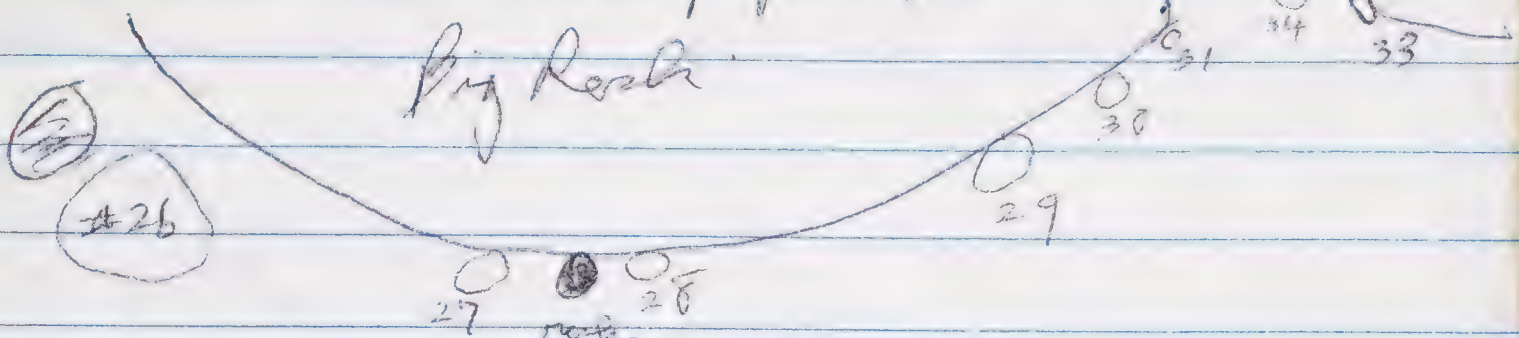


Pearson
1975

Quercus agrifolia

av. 22
(cont.)

Found several seedling sprouts/plants



#34 16 rosettes 60 x 55 m.m

#33 17 rosettes, 72 x 50

#32 A \pm 60 " 60 x 75

#32 B \pm 70 " 120 x 50

#31 photo 6 rosettes 40 x 25

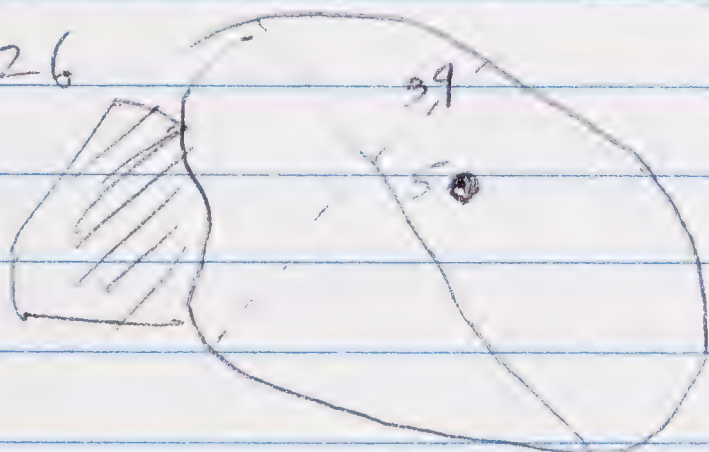
#30 14 rosettes 40 x 30

#29 \pm 60 " 100 x 80

#28 15 rosettes 60 x 35

#27 \pm 70 " 100 x 90

#26



21-25 not found, presumably dead. I'm 80%
sure I was looking under the proper overhang

South Gully, above *Quercus agrifolia*

37, 1.57

#80 no nuts, no seeds, blossoms on double (w) 1.37 1.57

1.31, 1.60

70 late blossoms or early seeds on double 1.31 1.60

1.12, 1.28

77 blossoms double + nuts 1.12 1.28

1.12

Beam
1975

yareta measurements

Nov. 23	Comments	Top	uphill	Rt. Down	E/W	
52	late blossoms + seeds, all sides. No dead	19	24	23	20	22
53	new + late blossoms, all aspects south (rt)					
	22 23 23 24 no dead					
54	Blossoms all sides	22	26 in and 1"	23	19	20
56 55	Spars flowers + late flowers	22 $\frac{1}{2}$	24	23	19	19
55 54	Spars flowers	22	25 mounded	23	21	21
57	Spars flowers	24	27 mounded	26	22	17
58	Spars flowers left.	20	19	24	21	18
59	Flowers	20	24	23	19	-
60	Spars flowers down and left	22	27 edge of dead	23	21	21
			edge of dead			

Pearson
1975

Nov. 23 Yaveta camp.

nails

number comments

Top	uphill	pt.	Down Left	Left.
-	-	-	-	21
21	21	22	21	20
-	23	24	21	-
-	-	-	26	-
21	22	24 24	20	18
	21			
19 $\frac{1}{2}$		23 $\frac{1}{2}$	19	14
	20		19	
17	23 $\frac{1}{2}$ from dead 23	24	21	19

40 Top not out of soil, early seeds on left, flower on top

41 Blossom all sides
very moist 5-10 mm

49 Top moist 2 mm

42 Blossom all sides

43 Moist, first blossom all sides - Top in bud

44 Top in bud, first blossom all sides

45 Top moist 12 mm
Blossom all sides

46 small patch on uphill
side of rock, no flower
or seeds

47 Top moist 6-8

48 Top in bud
early seeds on soil

42 42 no seeds, early seeds on left

50 Blossom all sides
seeds

51 Top in bud
blossom all sides

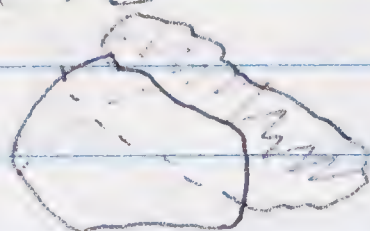
Reason
1975

10

Blossom.

Uphill $8\frac{1}{2}$, downhill $4\frac{1}{2}$

Uphill arc 93, crosshill 54



19

after blossom

Uphill mail 10 m. arc 1.31 x 52

20

Blossom all sides, One nail near top 7 m. arc ^{near} 1.05 x ^{vertical} 1.00

this is an isolated clump, all heavily left a little
dead near grand up hill

Pearson
1975

north Gulley, above Quenuaplaya. Could recognize the yareta beds from the panorama photos, both here and in South Gulley, but none of them had nails in them. Either Carol mis-remembered or somebody stole all the nails. Tony Suscombe caught a cold *Siobennia* under rocks.

Drove up the hill to yareta camp, which looks just the same. Dry. Put out 16 large Sherman near camp, and looked over the yareta line. Breeze up canyon until 6 p.m., then calm.

nov. 23 Yareta camp, 13 km NE Toca 4,500 m. Night slightly hazy, but frost on car. Clear at sunrise, but cloudy bright beginning about 7:30. Nothing in traps.

Measured Carol's yareta. Couldn't find many of the ones marked with paint.

Heard one batch of *Timanotis* at daybreak. Lots of traffic on the road, day and night, much of it Bolivian.

Heated for Chollafalca about 10:30, arrived at the lizard camp about 2 p.m. Windy, some clouds.

Saw 1 large male lizard out about 3 p.m., and another under a rock at 4:30 too warm to catch. Also a female out at about 4:30.

Put out about 20 museum specials at 4:30, baited with rolled oats, around a couple of mini-corrals and across the *Festuca*-*Leptodophyllum*.

nov. 24 AM cloudy, no frost, but plenty ice on buckets. Gradually became more sunny, but always some clouds about. Hunted lizards for about 6 hrs. Saw one out as early as 7:30, but she went down when I tried to reuse

Pearson
1975

her and apparently stayed down until an hour or so later
I dug her up. Dug up a big mole that had spotted yesterday,
and moved another ♂ and another ♀. Saw about 3 other adult
♀♀ and one adult ♂ who got away. Also saw one Sceloporus
atracatus along the stream. No toads or frogs in spite
of turning over lots of rocks.

Snuff traps line caught 3 Ambystoma sublineum and
1 Ambystoma talpoideum.

Still sunny at 2 pm although clouds to the east.

Put 11 big Shermans with rolled oats in good rocky
level along stream (other side, downstream). Left out 22
snuff traps. Evening hazy, brightest stars visible.

Nov. 25 morning fairly heavy clouds, 26° at 5:30 AM, no frost.
Sun then hazy-bright with shadows.

Nothing in Shermans downstream. 2 more sublineum
in snuff traps. Picked all of them up.

Ran a photo-pycnophyllum vs rock experiment with big moles
#1 and #2.

Saw 2 adult ♀ bigods while picking up traps at 9 AM. Tony
found 2 1-inch toads under a boulder at 8:00. Cold cold toads.
They were under a large oval boulder and quite deep, at
least 1 foot deep where the soil was damp. Small black
toadpoles in a large puddle off of stream.

Nov. 25

signed #1 has molt at tips of tail, and also near base

started photographing at 7:00

two grey patches in photo, neither ^{is} white.

Photo 6:57

7:03 quiet. Thin uniform whiffing no wind

7:08 " " " " no wind

7:16 " " " " "

7:22 " " " " "

7:29 " " " " "

7:45 " " " " "

about as hot as they can get with this sun

8:00 " brighter but still hazy

8:07 " " " " "

respiration seems to correspond to body temp
#2 always slower.

8:15 with big sun dog (as earlier),

8:20 no photo but sun still ^{is} there
clock has stopped

8:25 last photo

all same exposure

Pearson
1975

photo-color - Pyeno vs. rock.
mar. 25
blue x with red filter.

Time:	Thermocouple surface temps: $\frac{1}{3}$ sector west							
	air Bot	Shot Volts	Rock Volts	Pyeno Volts	Rock ΔV	Pyeno ΔV	Black common T_r°	T_p°
6:34	1.2	170	400	500	230	330	4.5°	6.2°
6:47	3.0	100	350	500	250	400	6.5°	9.5°
7:00	5.5	120	310	480	190	360	8.0°	11.0°
7:17	5.7	140	500	620	360	480	11.2°	13.7°
7:30	6.8	120	420	490	300	370	11.3°	12.5°
7:45	6.8	120	505	620	385	500	12.8°	15°
7:59	8.4	150	740	780	590	630	18.4°	19.1°
8:06	10.5	140	750	780	610	640	20.7°	21.2°
8:16	9.8	120	710	780	590	660	19.8°	21.0°
8:23	11.5	110	580	500	470	390	19.0°	19.7°

air		Pyeno		Rock	
Time	3 in	Legend #1 (Schultzei)	Legend #2 (Schultzei rect)		
5.0	6:57	10.5°	10.5°		
5.4	7:09	15.3	12.8	-2.5°	
5.6	7:14				
5.7	7:16				
6.0	7:23	19.2	15.0	-4.2°	
6.8	7:30				
6.8	7:32	21.0	17.0	-4.0°	
6.8	7:45	21.6	15.0	-6.6°	
8.4	8:02	28.6	22.4	-6.2	
10.5	8:08	27.4	23.4	-4.0	
9.8	8:16	29.4	25.5	-3.9	
8:23		sunbed placed			
8:25		29.4 #2 on pyro	28.4 #1 on rock		
		diff 1°			

Pearson
1975

Summary of photo - Pyro vs rock: Sun was always filtered,
with halo, but strong enough for shadows. Stopwatch ran down
sometime before 820. Lizards behaved well, little activity. The surface
temps were taken with thermocouple under several layers (3+4)
of masking tape with a wisp of cotton between 2 layers. Some
of these surface readings were drifting, hence not too reliable.
Lizard #1 weighed 20g, lizard #2 weighed 16g.
The rock lizard #2 ran 3.9° to 6.6° colder than the Pyro lizard #1
when switched, at the end, ~~the~~ #1 after 5 minutes on the rock
was 1° colder.

Calibration of thermometers

~~Temp~~ ~~Water~~ ~~Ice~~ ~~Oil~~

per 20 drops JW1 - 39.2°
 38.6 6.6, 6.5, 6.6, 6.6 ~~reads~~ reads per 20 drops

no go JW2 -

per 20 drops OP1 - 37.5
4.7, 4.6, 4.6, 4.5.

JW1 32.5 11.4, 11.0, 10.8, 10.8, 10.6, 10.7
~~OP1~~ 32.0

OP1 32.0 6.2, 6.1, 5.9, 5.9, 5.8, 5.8, 5.9
 31.9

JW1 22.8 23.5, 23.4, 23.4
 23.0

OP1 23.0 9.4, 9.2, 9.1, 9.0, 9.0, 9.0
 22.7

per 10 drops JW1 16.8°
 17.0 21.3, 21.2, 21.1, 21.1,
 17.0

20 drops OP1 12.2, 12.1, 12.1.

When I went back after lunch to re-run the photo
experiment, the sun had moved, so as to put the area in shadow.
Soldered thermometers and calibrated them, but had to wait for
colder weather because the river water at 1012 pm was up
to 16° . Hunted lizards in cloudy-sunny afternoon, but saw
only females or juvs (but saw 1 baby). Sky at least $2/3$
clouds all day.

Reeson
1975

at 4 P. we put out about 18 museum specials on the same
line as the live traps yesterday *
not much afternoon wind.

Continuation of Calibration

	Temp.°	clips per 10 or 20 clips
JW1	5.7° doesn't work	
OPI 20 clips	5.5° } 5.7° }	21.4, 22.0, 22.0, 21.9.
JW1	no go	
OPI	10.0° 10.0°	17.5, 17.2, 17.1, 17.0, 17.1
JW1	no go	
OPI	12.6 13.5	15.4, 15.0, 15.2, 15.2,
JW1	15.2° 15.0	27.3, 26.9, 26.9, 27.0 10 clips
OPI		14.4, 13.6, 13.4, 13.4. 20 clips

Nov. 26 morning clear all over. minimum and temp at 5 AM 13°. no frost.
morning almost all clear, a few clouds. Afternoon windy
and increasing clouds, but seemed to be sunning over camp
until at least 2:30 (noon). Temp reached $22\frac{1}{2}^{\circ}$ at 1:18, and the
temp. was over 18° for hours. Tony caught more lizards, and I
did "experiments".

Did a repeat of yesterday's color & temp + rock & pycno, only
with telemetered lizards #2 & #3. (#1 did from too much ether,
so we used ice for the other 2. Results: Beautiful. The pycno
lizard warmed up faster, ^{to 35.8°} the rock lizard never could make it
above 30°. (I had kept the rock shaded until ready to start).
The rock lizard promptly warmed up to its save temp as
the pycno lizard when put onto Pycnophyllum.

Nov. 26, 1961. Zipped 2 & 3
 Zipped 2 is over 100%
~~later~~ labeled the
 rock until
 start

Second half of roll of Plus X

Photo 7 = 46

with red filter.
 no stop watch

#1 7:54

#2 8:02

#3 8:08

#4 8:15

#5 8:32

#6 8:35

#7 8:40 last

#8 8:57 photo of half - silver

#9 9:19 photo of normal + silver

#10

#11

Pearson
1975

Photo nov. 26 Pyrene on rock

1/3, collector washed
pyrene

Surface
temp

Time	air deg	short Volts	Rock Volts	Pyrene Volts	Rock AV	Rock Temp	Pyrene AV	Pyrene Temp
8:50	11.8°	160	780	820	22.3	22.3°		23°
8:55	11.5°	250	460	720		14.3°		19.3°
8:06	11.5	220	540	810		16.5°		21.3°
	12.4	210	505	770		16.9° ↓		21.8° ↑
8:25	12.4	200	720	720		20.9°		21.9
8:38	13.0	330	750	730		19.7°		

Taken
✓

Taken
✓

air	Time	sun	20 counts Pyrene Signal 2	20 counts Rock Signal 3	17 gms north telemetry
7:43	bright		50.2	70	
11.5°	7:48			15.6°	16.0
	7:52		24.8 (10)	14.4 (20)	13.8°
11.5°	7:53	bright	20.0 (10)	13.0 (20)	16°
11.5°	7:57		11.6 (10)	12.0	17.4°
12.0°	7:59		18.2 (20)	11.0 (20)	19°
12.0	8:02		15.8 28°	10.6	19.7°
11.5	8:07	bright	11.4 31.5°	9.9	20.8
12.0°	8:10		10.3 32.5	9.0	22.6°
12.0°	8:14	bright	8.8 34°	8.4	24°
12.5	8:18		8.3 34.7	8.0	25°
12.4	8:23	"	7.5 = 35.8°	7.6	26.5
12.8	8:33		8.0 35.2°	7.2	27.9°
	8:36		7.8 35.4°	6.4 = 30°	
13.0	8:41		7.50 35.8°	6.5	29.7°

Pearson
1975

cont. Telenor SW1
Telenor SW1

wood Rock lizard number 3 photo Pygma at 8:42

airtemp	Time	Pygma #2 cloud	Pygma #3 cloud	17g with Telenor	sun
14.2°	8:47	7.1 = 36.6°	5.8	31.8°	a few wisps
	8:50				larger wisps
	8:51	7.4 35.9	5.1	34.8°	
	8:52	7.5 35.8	5.0	35.1	
	8:54	7.3 36.2	4.8	36.0	
	8:55		4.8	36.0	
8: ————— painted back half silver off #3					
	8:57	7.2 36.3	4.9	36.8	photo
	8:59		4.8	36.0	
	9:01		4.6	37.4°	sun bright
	9:03	6.8 = 37°	4.6	37.4	
	9:04	6.4 37.8°	4.7	37.0	← sprayed all
	9:06	6.4 37.8	4.5	38.0	
	9:07		4.7	37.0	sun bright
	9:08	6.2 38°	4.6	37.4	
	9:10	6.2 38	4.4	38.2	
	9:11		4.7	37.0	← sprayed all bottoms
16.4	9:13	6.2 mostly open 38°	4.7	37.0	
16.4°	9:15	6.4 37.8°	4.6	37.4	
	9:17	6.7 37.3	4.7	37.0	
	9:19	photo of animal & wires			

air 16.4 short 205 v 670 = Pygma (= 24.0°)

Reason
1975

Nov. 26 spray eff. on *pycnothyllum*

4 females, about same size. Sprayed and
put out 10:13 AM., bright sun started out over
Pycnothyllum

	<u>control</u>	<u>all silver</u>	<u>all black</u>	<u>silver bottom</u>	
may not all have been at same temp at start					
10:19	35	31	37.4	34.4	air 17°
10:24	35.4	32.6	37.0	35.5	
10:28	34.8	33.2	37.2	35.4	16 ¹⁰ / ₂
10:36	moved to cold rock (covered until near with sleeping bag)				
10:38	31.2	29.5	30.5	28.2 (snapped)	
10:41	cloudy				
10:45	24.4	24.6	25.3	24.4	still cloudy
10:49	23.0	22.8	24.1	23.0	cloudy bright
10:57	21.0	20.5	23.0	21.0	air 16.4° cloudy bright in
11:02	21.6	21.2	22.8	21.6	shadow cloudy bright in shadow
11:08	rock surface: 120 centred 200 north ^{16.4°} on-off shadows				
11:09	24.8	23.2	26.0	24.8	but all cloudy bright.
11:15	26.0	24.0	27.2	26.0	
11:16	moved to <i>Pycnothyllum</i>				
11:23	35.4	32.0	37.0	35.4	sun brighter bright
11:28	35.5	33.2	36.4	35.5	cloudy bright comfortable as to on rock

Pearson
1975

Exp. vs. dead. onto Pycnophylloids
at 12:53. 2x yesterday for weights. Same Pair.

Nov. 26

Red #1

Exp #2 with SW1

12:55	18.4° (2hullthine)	20.9 ^{24.2°} (20 x 100)	sun	
12:57		15.3 28.2°	sun	some wind
12:59	24.3°	11.7 31.5°	sun	"
1:01		9.3 33.5°	sun	"
1:03	28.2	8.3 34.8°	sun	"
1:05		8.1 35.0°	"	"
1:07	32.0	7.7 35.5	air 20.5°	"
1:10		7.8 35.5	"	"
1:12	35.6	7.7 ^{35.5} not parting	air 21°	"
1:15	36.8	7.3 ^{=36.0°}	"	"
1:18	37.0	7.7 ^{35.5}	air 22.5°	"
1:21	36.4	7.6 ^{35.6}		definitely windy
1:23	36.4	hasn't moved the whole time		"
	same orientation as line over			
1:24	36.0	8.7 33.5°	air 20.8°	"
1:26	36.4	8.7 33.5°		"

Black + silver film cans in sun + wind as above.

	<u>Silver</u>	<u>Black</u>	
1:38	30.5°	33°	
1:42	30.5	31.4	air 17.5
1:45	28.5	33.4	
1:52	30.0	35.5	air 18° running windy

Pearson
1975

Nov. 26
(cont.)

The rock lizard was then sprayed ^{topside only} (back half) with silver = no diff from control lizard. Then sprayed all over (topside only) = no obvious diff. Then sprayed bottom all over = slightly cooler (less than $\frac{1}{2}$ degree).

Then chose 4 adult females of about same size and staked them out in bright sun on Pycnophyllum. Their equilibrium temperatures were in this order from hottest to coldest: black, normal + belly silver, silver all over + under, Range 4 to 5°.

The above four were then moved to a cold rock covered with sleeping bag. During cloudy-bright they were consistently black, normal, normal left, silver coolest (silver belly escaped). The difference never exceeded 3°. When moved back to Pycnophyllum they sorted out the same, with diff 4°.

Then compared dead #1 with live #2 (yesterday's pair) staked out on Pycno in ~~the~~ wind and hot sun. The live one reached 36° then dropped off a little. The dead one reached 37°. Good comparison because the live one lay motionless the whole time, so the position of the dead one matched well. The live one did not overheat (hot sun + Pycno and wind air up to 22½° and did not keep his mouth open).

Natural selection having the skin color of lizards for thermoregulatory purposes doesn't seem to have improved more than a degree or two C° over black or silver!

Then ran black and silver film canisters in wind and hot sun. Small hole on shady side covered with masking tape, the Schmitts then slid through ~~the~~ a small hole in the tape. Tight fit. The black can ran about 5° warmer - and same temp. as a lizard!!

Reamon
1975

Nov. 27 Thermocouple down lizard holes: 6:05 AM

air short v. hot v

-1° 205 295 = -0.5°

0.8 250* 400 = 2.5°

2.5° 210 270 = 2.5°

3.4 195 265 = 3.6°

* maybe didn't short out -

deafened. 6:35, skinned unilaterally,
matched pair, deep body temp 10° . Weighes 10g. skin patch recd.

warm-up of Black, normal + silver on Pyrex

		Black	normal	silver
6:51	sun	8°	5°	4.5°
6:57	sun	13.2°	12.3°	$19.3(20) 7.9^{\circ}$
6:59	"			$18.5(20) 8.6^{\circ}$
7:01	"	18.5°	14.5°	$17.5 9.6^{\circ}$
7:03	"			$16.3 11.0^{\circ}$
7:05	"	21.0	$29.3(20) 12.5^{\circ}$	$15.1 12.5^{\circ}$
7:07	"		$40 17.5^{\circ}$	15.1
7:09	"	24.5°	$36.6 18\frac{1}{2}^{\circ}$	$13.8 14.5^{\circ}$
7:11	air 10°		$29.6 20\frac{1}{2}^{\circ}$	$13.4 15.1^{\circ}$
7:15	sun	23.5°	$25.2 22.2^{\circ}$	$11.0 19.0^{\circ}$
7:16	Pyrex insert 120 short air 10° Pyrex 640v			$10.3 = 18.5^{\circ}$
7:18			$22.3 23.3^{\circ}$	$10.3 20.0^{\circ}$

air 7.8 in bet, short v 140 Pyrex 800v = 19.0°

7:21	sun, with breeze	25.0°	$20.5 24.8^{\circ}$	$9.3 22.0^{\circ}$
7:24	sun		$16.7 27.3^{\circ}$	$8.6 23.8^{\circ}$
7:26	sun	28.5°	$14.8 (28.9^{\circ} / 20.2^{\circ})$	$8.1 25.0^{\circ}$

Pearson
1975

Black normal silver

7:30	sun		13.4 (use) 29.7°	7.4 max 26.9°	
7:33	"	29.8°	12.3 30.5°	7.1 28.0°	
7:35	"		11.5 31.6	7.0 28.1°	
7:40	"	32.0°	10.5 32.4	6.9 28.3°	
7:42	Pyro air bot 10.4° 170V Pyro 770V. = 20.4°				
7:47	sun	34.1°	9.1 33.9°	6.2 31.0°	
7:52	sun	air in bot 13.5°	shot V 100 Pyro V 500 = 19.5°		
7:54	sun	35.8	8.9 34.1°	5.9 31.5°	

8:20 Hot-bill yg ♂, 35.6°, decapitated. 8g.

Blackie, normal, & silver onto cold rock

		<u>Black</u>	<u>normal</u>	<u>silver</u>	
8:35	sun	9.0°	8.8°	7.0°	
8:39	sun	15	15	16.9 (10.3°)	(see per 20 chab)
8:40	sun	15°	15°		
8:42	sun ?		23.5 (16°)	15.8 11.5°	
	15.8° bot	80V shot 200V rock ΔV = 120 ΔT = 17°			lots more like 10°
8:46	sun	21.5°	17.3 (10) 19°	13.0 16°	
8:50	sun		14.3 (10) 21°	11.3 18.5°	
8:54	air bot 10.5	shot V 165	rock V 400	= 13.8°	
8:55	sun	22.2° chab	12.7 (10) 22°	9.5 21.7°	
9:01	whispy clouds, but sun bright	26.5°	21.4 (20) 24°	8.3 22°	
9:06	" " "		18.4 26°	7.6 26.3°	
9:10	" " "	29.2°	16.6 27.5°	7.3 27.0°	
	air 11.5°, air bot 12.2°	shot V 140	rock V 690	= 21.4°	
9:15			15.7 28°	6.7 29.3°	

Pearson
1975

		Black	normal	Silver
9:18	sunny, Very thin rocks.	30.2°	14.3	
9:20			14.3 27.5°	6.5 29.9°
9:22	air 15.0°			
9:25	sun	31.4	13.4 29.7°	6.2 31.0°
9:27	look air 15.5° about V 125 rock V 780 ΔV 655 ΔT = 11.2° = 26.7°			

The silver spray point is ^{PACTRA} NAMEL Chrome Silver 5H
~~and~~ and Flat Black SFI

nov. 27
(cont.) morning was clear, temp. 14°, no frost. Sunny all morning except for a few whiffs. Nothing in the snaf-trap line either yesterday morning or today. Picked it up.

Spent the morning on lizard experiments. The warmups on pyrex about same as yesterday with black-normal-silver sequence. When done on cold rocks they could not achieve as high a temp, even though sun was higher and presumably hotter. Sequence, however, was not the same.

after lunch broke camp and drove to a few miles beyond Copago looking for rheas, then to the pueblo Anconaco where I presented a school photo to the teacher (one of two ~~other~~ ^{the} ~~other~~ in the photo). Then drove back to our coral campsite of previous years. Very windy. Set traps 5-6. Still cold windy at 7:10.

nov. 28 Some mist for most of the night. minimum about 20°. morning clear. Trap line (a mixture of snaf + lots, 50+) caught only one sublimis, after 8 AM saw numerous tiny Poliochrous alticola, but

Reamon
1975

male
Mar. 28 State-out at 7:30 on rock going down

A = normal ♂

8:00
29.2 8:11
31.8

9:20
~~30.8~~ ~~31.2~~ 9:22
33.0

B = dead ♂ (just killed with other 32.0 34.4

~~32.8~~ 33.8

C = normal (asaphid)

(D) = normal (paler than others)

29.2 28.5
pale

~~30.2~~ 29.2

E = blackie from yesterday ^{added later}

28.0 33.2

~~30.8~~ 31.0

spayed bottom silver
at 8:25

air 10
Bot V 140
Bot V 130
Rock 600
600

wholly cloudy

21° rock surface

	<u>8:36</u>	<u>8:50</u>	<u>9:01</u>
A	35.6	33.5	36.6 normal
B dead	38.0	39.0	41.6 (dead early today)
silver bottom D	32.8	spayed top 8:37 32.4	
E	36.5	silver 32.4	35.8 (silver)


air 11.2°

19°
80V bot
800V neg

20°

9:20
Botan ~~30.2~~ 22.4
Bot V 12.0
Rock V 47.0
shale 50° F

Leamon
1975

Nov 28 Female stakeout 8:00 AM				
	8:30	8:40 8:50	8:55	8:57
(1) normal	31.0	33.8		35.0
(2) normal	30.6	33.0		35.8
(3) silver from earlier	28.5	31.8	called	30.0
(4) normal (called then at 9:05 8:57)	29.0	34.8		36.3
(5) normal				
(6) black from before	33.7	37.8	called	38.1

(1)	37.2	9:07
(2)	36.4	
(3)	33.8	
normal (4) dead	37.4	
(6) black dead	42.2	

till 9:30
all morning was sunny, only a few whistles.

Reson
1975

no multiformis.

afternoon clear warm + windy. Saw quince fig
in an abandoned ^{no} tree area near the corral.

Pampa de Anconera

1/29

Seabent on pyroclastic at Pampa de Anconera
melting
#2 Telometer just 1
Telometer off #1

Time	Sun	Silver	Normal	Silver
7:36	sun, wind	6.0°	4.8°	5.2°
7:43	" "		21.5(10) 16.7°	14.5(21) 13.7°
7:45	" "	23.8°	16.2	
7:46	" "		16.2(10) 19.7°	12.5(20) 16.5°
7:48	" "	27.2	22.4(20) 23.5°	11.7 18°
7:51	" "	28.2	19.1 25.4°	10.4 19.8°
		Bot air 12.4	Bot V 40	Pyro V 200 = 24°
7:54	" "	31.8°	14.3 28.8°	9.3 22°
7:57	" "		16.8 29.7°	7.7 26°
8:00	" "	31.7°	10.0 33.0°	6.9 28.4°

insert 1 mm Bot air 16° Bot V 110 Pyro V 680 = 25°

Schulteis in Pyro 18°, 28°, 27°

shade temp 10°

8:04	" "	33.4	8.9 34.0°	7.0 28.2°
8:08	" "	35.2	8.0 35.2°	6.6 29.5°

Schulteis in Pyro ~~27.0°~~ 27.0°, 28.6°

8:11			7.6 36.5	6.5 29.8°
8:15		35.7	6.8 37.5	6.3 30°

Schulteis Pyro 24° 25½°

air 12.0°

Pearson
1975

	Siber	Normal	Siber Green
8:20 run, no wind.	35.8°	6.5 38.5 37.9	5.6 32.8
8:24	36.5	5.6 38° 40±	5.2 34.7°
8:26 Pyro 27½, shade 9.6			
8:28	34.4	5.6, 38° 40±	5.1 35.0°
8:30		^{dropt} Schulkin 42° Telen 6.3 37°	

This was a good run, beasts quiet, sun bright with no clouds.

Night was clear, morning clear, no wind. Saw trap line had 2 Eligmodontia and 4 Bolomys barleischii, set 6 + 0 steel traps for two - two and after about 3 hrs caught one big one.

Saw (and caught) Liodon multiformis.

Left about noon for Tacna.

Nov. 30

Spent night at Acquia camp (mountain scrub). Quite dry, a few Cantua blossoms. Potapora and a black hummer. Ice overnight. Left for Tarma and Tarma at 8 a.m.

Dec. 1.

Mostly English Sparrows along the palm tree walk in Tarma, but numerous Zonotrichia in gardens etc., some singing.

Left for Lima 10 a.m. by way of Morro Sana. Saw no condors or eagles there, but did see one other and lots of tracks. Vegetation very dry or non-existent, no green glaucous of cucumber vines, no animals.

225 8 Dec 3, 1975



Photo 2

Nov 7, 1975

Dec 8, 1975



Peason
1975

The Grindelia bushes have a few green branches with flowers, the other branches dry. Saw a few lizards, no small birds on grid. Surf lizards and a surf Cinclodes.

Dec 2. Camped at the microwave place above Camaná.
no vegetation left a few dead twigs and a few half-burned cactus joints. Lima about 9 p.m.
Chilca

Dec. 8 Wet bulb 63° - 68° . about noon.

Garden on the saddle:

"G" 00
210g.
about 6 rows dead

seeds "I" 620g +
= I 80g. dead
place
blooms

00 = 700g

blooms 845g
blooms

"H" 615g blooms
about 20 rows dead 00

about 7 rows "F"
9 dead
150g

"E" → 00
540g blooms

seeds "C"
about 10 rows dead
300g.

00 blooms .810g
setting on "ant" food

Honeycreepers common, feeding on purple Tillandsia blooms.

Peavon
1975

Side - hill garden:
"I" 820g

100 mm dead
315g
±15 mm.

old
seed/peds.

415g

15 mm dead
100 mm dead

460g

smaller head
broken off
due to a
1/2" bore
grub in stalk

"F"

320

flowers
735g

flowers
575g
"D"

"V" = A
tag
seed/peds.

190g
12-15 mm dead
120-180 mm dead

560g. rest of dead.

seed/peds "C"

470g

120-160 mm
dead

Tails are between 1 and 2 mm before they disintegrate. about 75% of the Tillandsia area is dead Tillandsia. There must have been 3 to 6 hummers working on the study area. No noticeable disintegration yet of the dead leaves on the weighed plants. Found one gecko under a Tillandsia next to the saddle V. also saw one other lively lizard, on the area, I think. Saw curly bird droppings but no Burhinus tracks. mouse tracks just below the area. Rocks on top of the hill have all been scraped away, and there are motorcycle tracks up to the top. Cheerful Charlie's B16 Tillandsia sign looks the same as before.

Pearson, O.P.

1976

catalogue

5185—5387

Argentina

Pearson
1976

Argentina
San Martin
Parque ~~Mendoza~~, Mendoza City, Mendoza.
Oct. 18, 1976

5185 ♂ Myotis chiloensis 92 x 39 x 7 x 13 5.0g. caught Oct. 15, frozen.
did wash in tail membrane. gift of Julia Contreras
Testis 2 mm white
access. 4 mm across.

5186 ♀ marwasa pusilla 193 x 103 x 12 x 21 15.0g. not preg. Caught by Julia Contreras
under rocks. Killed 10/18
2 mi. N Monte Coman, (Rio Diamante), Mendoza

Oct. 22

5187 ♀ Calomys Parour
141 x 73 x 17½ x 12 12g.

5188 ♀ Abodon Oct. 23
10 km. N. Ovejuna, Prov. Mendoza, Argentina
preg. 3R, 2 left
184 x 79 x 23½ x 19 30g

5189 ♀ Tadarida 10 km N. Gaspar Campos, Prov. Mendoza
rt. horn 1 mm.
left horn clavate, 3 mm diam
99 x 36 x 8 x 17 8.1g

Skull only : pickup
5190 armadillo Ovejuna, Prov. Mendoza, Argentina

Los Parlamentos, 60 km NNE Malargüe, 1170 M., Prov. Mendoza.

October 24, 1976

Skull only
5191 ♀ Tadarida nipples not seen, vagina open. Rt. ov. large foll.
fat. Right horn larger, not vis. preg. 97 x 36 x ear 18, brain 44 12.0 gm

Skull only
5192 ♀ Tadarida nipple not seen, vagina open.
Rt. horn slightly larger, not preg. No foll or CL seen 102 x 40 x ear 18 x FA 44 11.0 gm

Skull only
5193 ♂ Tadarida epid. not in tail. Testes 4 mm, white
epid. tiny, accessories tiny 100 x 38 x ear 17 x FA 42 10.0 gm

Skull only
5194 ♂ Tadarida testis 5 mm, grayish. Epid. tiny, not in tail
ventral "disc" 8 x 10 mm 98 x 38 x ear 18 x FA 44 10.1 gm

Skull only
5195 ♂ Tadarida Ventral "disc" 6 x 7
testis 6 mm, grayish. Epid. tiny, not in tail. 101 x 36 x ear 19 x FA 43 10.5

5196 ♀ Tadarida nipples not seen, rt. ov. larger, no foll or CL
rt. horn larger, 2½ mm diam., foll. not preg. 98 x 38 x ear 17 x HF E FA 45 11.0g

OPP.
1976

Los Parlamentos, 60 km NNE Malargüe, 1170M, Prov. Mendoza
Oct. 24, 1976

5197 ♂ Ctenomys

testes 13mm, accessories long but narrow
270 x 79 x 37 x 6 190 gm

Oct. 26, 1976

45 km SSE Chos Malal, Prov. Neuquén, Argentina

5198 ♂ Oryzomys

800 M.

testis 7mm
218 x 126 x 30 x 16 38 gm

5199 ♂ Eligmodontia

testis 7mm, accessories large 181 x 98 x 24 x 16 24 gm

5200 ♂ Zooryzomys

testis 13mm, SV large
280 x 150 x 29 x 26 79 gm

Oct. 29, 1976

790

Achalay!

4 km W San Carlos de Bariloche, Rio Negro, Argentina

5201 ♂ Ladainia

testis white, accessories 4x3

testis 4mm, FA
108 x 39 x 8 x 18 45 13 gm

Oct. 30, 1976

no sperms in testes

5202 ♂ Myotis

epidid - tubes not visible, about 2mm.
scrotal sacs visible in tail membrane

testes white, 2 1/2mm FA
81 x 34 x 8 x 14.5 38 5.6 gm

5203 ♀ Myotis

vagina not open; nipples not seen.
uterus small, white, both sides equal.
ovaries equal; no follicles or CL visible

88 x 36 x 8 x 14 FA
39 6.1 gm

Hotel Lago Moreno, 790M, Rio Negro, Argentina

5204 ♀ Myotis

vagina open, nipples not seen; lone roosting
in garage in PM.
uterus white, right horn slightly larger - 3 x 1.5mm.
no follicles or CL seen

90 x 38 x 9 x 15 FA
39 7.3 gm

[10 PM: 9.5; 8:30 AM, 10.5] Oct. 31, 1976

[below = in net overnight]

5205 ♀ Myotis

uterus small, white.
rt horn slightly larger - 2 x 1.5mm
vag. not open; nipple not found

ovaries no follicles or CL seen
stomach full
93 x 37 x 7 x 15 FA
40 7.9 gm

5206 ♀ "

uterus small, white; rt horn larger 2.5 x 2

stomach full 89 x 37 x 8.5 x 15 38 7.6 gm

skull only

5207 ♀ "

nipples not found ov: no follicles or CL
uterus tiny, white, equal: 1 x 2mm

stomach full — x 35 x 7 x 15 FA
40 7.2 gm

[wt. of 3 full stomachs = 2.2 gm]

skull only

5208 ♀ "

vag. not open, nipple medium. ovaries pinkish, but no follicles or CL
uterus vascular, rt horn larger - 3 x 2

stomach 1/2 full 87 x 37 x 10 x 15 38.5 6.8 gm

sk. only

5209 ♀ "

vag. not open, nipple medium; maybe preg.; no follicles or CL seen
uterus vascular, rt horn larger: 3 x 2.5

stomach full 89 x 36 x 10 x 15 40 7.8 gm

sk. only

5210 ♀ "

vag. open, nipple not seen; ovaries - no follicles or CL.
uterus - rt horn larger, almost spherical, 2.5mm

stomach empty 90 x 34 x 9 x 13.5 FA
40 7.3 gm

sk. only

5211 ♀ "

vag. not open, nipple med; ovaries pink
uterus - rt horn slightly larger - 2 x 1.5mm

stomach very full 93 x 37 x 9 x 13 40 8.7 gm

sk. only

5212 ♀ "

vag. open, nipple med.; ov. pink, no follicles or CL
uterus vascular, rt horn larger - 2 x 2

stomach very full 90 x 36 x 9 x 14 38.5 7.4 gm

sk. only

5213 ♀ "

vag. not open, nipple not seen; ov. pink, no follicles or CL seen
uterus vascular, rt. horn slightly larger - 2.5 x 2

stomach full 92 x 36 x 9 x 14.5 39 7.2 gm

sk. only

5214 ♀ "

uterus small, white, horns equal

stomach full 89 x 38 x 9 x 14 39 8.1 gm

OPP
1976

Oct. 31, 1976 continued
Hotel Lago Moreno, 790 M, Prov. Rio Negro, Argentina

sk. only	5215	♀	<u>Myotis</u>	veg. open, nipples not found; ovaries pink, no foll or CL	stomach full	91 x 38 x 9 x 15 x 39	FA	7.6g
parasite-mite	5216	♀	"	uterus tiny, horns equal; 1.5 x 1	stomach very full	91 x 39 x 9 x 14 x 40	FA	8.1g
				uterus vascular, rt horn much larger - 2.5 x 2.5 swollen				
				vagina open, nipple median				
				ovaries pinkish, no clear follicles or CL.				
parasite flea	5217	♀	"	uterus white, rt. horn larger, 1.2 x 2. Ovary small, not pink. rt. ovary w/ brown stain at one end.		88 x 35 x 9 x 14 x 40	FA	7.3g
skull only	5218	♀	"	uterus tiny, rt horn slightly larger - 1 x 1	killed next noon - 1 PM	97 x 41 x 9 x 14		40.5 6.2
				vagina not open, nipple not seen	early into met (9:30)			
				ov. pink, not foll or CL seen				

Nov. 1, 1976

Perito Moreno, 25 km ENE-S.C. de Bariloche, 800m, Prov. Rio Negro, Argentina

parasite	5219	♂	<u>Phyllotis</u>	testis 9, S.V. 8m		245 x 123 x 29 x 27		65g.
	5220	♀	"	ov. large follicles.				
				vagina open, not freq.	vagina large + touch	220 x 110 x 28 x 28		50g.
	5221	♂	<u>Akodon</u>	testis 11, S.V. very large		160 x 65 x 22 x 15		30g.
	5222	♀	"	large vag.				
				not freq. large CL.		162 x 68 x 23 x 15		30g

Nov. 2, 1976

5 km SE
Estancia Pilcaniyeu, Prov. Rio Negro, Argentina

	5223	♂	<u>Akodon</u> <u>xan</u>	testis 10, accessories large		146 x 56 x 19 x 14		23g
	5224	♀	<u>Ctenomys</u>	no emb. st. horn, 3 in left		210 x 62 x 32 x 7		136g.
	5225	♀	<u>Akodon</u>	nipple small, much mammary tissue				
				vag. open; freq - 3 late fetuses, left horn		158 x 60 x 22 x 16		44g.
	5226	♀	<u>Phyllotis</u>	veg. closed.; uterus pink, not freq.	vagina large	238 x 120 x 28 x 28		52g

Nov. 3, 1976

+skel.	5227	♂	<u>Histiotes</u>	2 km N. El Maiten	Prov. Chubut Argentina	epidid 3mm, testes not visible		
				epidid visible in tail		testis 5mm, straw colored	FA	
				caught overnight in net (ca 11:30)		113 x 47 x 9 x 26 x 44		11.8g
				accessories smallish, 2.5mm.				

Nov. 4, 1976

38 km. S. Gobernador Costa, Prov. Chubut, Argentina

	5228	♀	<u>Eligmodontia</u>	uterus pink, not immature, no emb.		163 x 81 x 23 x 16.5		20g
	5229	♂	"			testis 6mm; SV 10		
						160 x 78 x 22 x 16		17.5

Pearson
1976

4 km W. Lago Blanco, Prov. Chubut, Argentina
Nov. 5

5230	♀ <i>Phyllotis</i>	preg, 2 rt 5 left 238 x 108 x 29 x 27	72 gm
5231	♂ <i>Akodon xantho.</i>	testes 12 mm 142 x 51 x 20 x 13	25.2
5232	♀ <i>Elgmodontia</i>	early preg. 1 rt 4 left; consid. mammary tissue 150 x 69 x 21 x 15	24

Nov. 6, 1976

~~25 km W~~
Laguna Grande (Labeada) Prov. Santa Cruz, Argentina

5233	♀ <i>Histiotes</i>	on porch 1900 air - 7 PM - torpid nipple not hard, vagina w/ small opening left ov. larger, med follicles visible; rt horn uteri globular - 3.5 mm diam, clear on rostrum in althi, torpid, 7 PM, air 19°	106 x 40 x 12 x 24 43	9.6 g
5234	♀ "	nipple med. large; vagina wide open, few around vagina goosey. late embryo - rt horn - 18 mm CR - 1.2 gr. w/ placenta etc. FA - 7 mm rt ovary - large CL maybe; left ovary - nothing visible	122 x 55 x 12 x 28 47	15.0 g

Nov. 7, 1976

5235	♀ <i>Histiotes</i>	killed in net 1:30 AM. (net in net at 1) nipple large, no milk vagina open. some mammary tissue 1 emb. - late preg. - some fingers: CR 24; wt concept - 2.8; FA 18 - rt horn nothing visible in ovaries stomach 1/3 full eye, body (ump), wing membranes.	111 x 43 x 11 x 28 46	17.4 g
5236	♀ <i>Histiotes</i>	caught net 1 AM, killed 8:30 AM. nipple large, no milk, vagina open small anat mammary tissue, modest ant. subcut. fat, esp. dorsal base of tail Total fat perhaps .5 g. Preg: rt horn, CR - 17 mm; rt ov. nothing, left ov. small follicles. Conceptus - 1.7 g, FA - 10 mm stomach almost empty	118 x 50 x 11 x 26 45	16.3 g

5237	♀ <i>Histiotes</i>	caught net 1 AM; killed 9 AM nipple large, with milk. Vagina open much mammary tissue. fetus rt horn - 2.9 g conceptus, CR 24 piglet wing etc, FA 15 rt ov. small follicles, left ov. med. follicles. stomach empty. Small ant. subcut. fat, base of tail + base of ears	106 x 43 x 11 x 26 45	16 g
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5238	♀ <i>Histiotes</i>	caught as 5236 + 7, killed 10 AM. nipple large, no milk, vagina open, considerable mammary tissue rt ov. small follicles; left ov. med. follicles. 1 emb. 2.8 g. Conceptus, rt. horn. CR 23 mm; 13 mm FA moderate subcut. fat. - maybe 0.5 g.	118 x 50 x 11 x 26 47.5	18.4 g
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caught and pickled Oct 22, 1976

2 mi N Monte Coman (Rio Diamante), Prov. Mendoza, Argentina

5239	<i>Lynx baileyi</i>	caught while we were following bull dogger working on road		
5240	"			

O. Pearson
1976

Monte Coma, (cont.)

5241 worm-snake

5242 snake

caught as 5239, 40.

Leptotyphlops baruchramus

Nov. 7, 1976

Laguna Grande (lake) Prov. Sta Cruz, Argentina

plus blood 5243

lizard *Tolamys fitzingeri*

" 5244

"

" 5245

"

Nov. 8, 1976

Laguna Grande (Pueblo) Prov. Sta Cruz, Argentina

+ stomach 5246

♂ *Heterotis*

Killed

Epid barely visible in tail.

testis greyish, blacky, 5.5 mm.

FA.

108 x 41 x 11 x 25 x 44.5

13.0g

in net about 11 PM. Epidid tubules not visible.

slight amount yellow fat at base of tail

stomach 1/3 full; accessories - prostate 2.5 mm. Yellow fat in abdominal cavity

testis white, 3.5; epidid. tub. not visible FA

5247

♂

"

In net at 5:15 AM. Epidid not visible in tail mem. 116 x 50 x 11 x 25.5

44

16.2g

appreciable subcut fat at base of tail - white

stomach full - 1.8g. Prostates invisible. White fat in abdominal cavity

testis 6.5, yellowish, blacky FA

5248

♂

"

In net at 5:15 AM. Epidid visible in tail

111 x 44 x 10 x 25

45

14.5g

epidid small, tubes not visible. Stomach 1/2 full. Yellowish fat in abdominal cavity

small amount subcut. fat, dorsal base of tail, slightly yellowish. Prostate 2 mm

5249

♀

"

Large nipple, vagina open.

107 x 47 x 11 x 26

46.5

14.6g

no fat. no mammary tissue; stomach empty

Preg nt. horn; nt. ov. small follicles, left ov. no follicles. Emb - CR 19 - Conceptus 2.3g

FA 12 mm

5250

♀

"

Nipples large, no milk. No fat

114 x 48 x 11 x 26

47

18.8g

stomach full - 1.5g Preg nt horn; conceptus 2.6; CR 19, FA "

left ov. small follicles; rt ov. small + med. follicles.

Nov. 10, 1976

52 km WSW El Calafate, Prov. Santa Cruz, Argentina

+ skeleton

5251

♂

Nationis

short-tailed

subcutaneous fat
epidid tubules visible

testis 10 mm; SV 12

173 x 53 x 26 x 14

72g.

5252

♂

Oryzomys

testis 7; SV 12

223 x 107 x 28 x 15

51g

5253

♂

Oryzomys

testis 8; SV 13

230 x 116 x 30 x 16

66g.

5254

♀

Akodon

(brown)

uterus vasc., conspicuous cl.

144 x 54 x 20 x 15

26g.

5255

♀

Akodon

(red-back)

4 emb.

180 x 77 x 26 x 15

53g

5256

♂

Akodon

"

testis 13

180 x 77 x 26 x 17

49g

O Pearson
1976

Nov. 11, 1976

Estancia Alta Vista, 24 km SW El Calafate, M. Prov. Sta Cruz, Argentina

- 5257 ♀ Reithrodon uterus juv 155 x 63 x 30 x 20 40g.
testis 10mm; SV 9
5258 ♂ Akodon xantho. 120 x 47 x 20 x 14 16.5g

Nov. 15, 1976

Nueva Lubecka, 2300 ft., 60 km S José de San Martín, Chubut

- 5259 Foti skinned carcass
5260 "
5261 "

- 5262 ♂ Eligmodontia testis 7, SV 12 167 x 80 x 22 x 17 27g
5263 ♀ " wide prime throughout Preg - 3 R, 1 L 159 x 75 x 22 x 15 20.5
5264 ♂ Akodon xantho. testis 9mm 131 x 50 x 20 x 14 21.7

Nov. 16, 1976

4 km N Maiten, 2000 ft., Prov. Chubut, Argentina

- 5265 ♂ Calomys ? caught in dry culvert under road. Wet grass either end. testes 5mm, white; SV 8 129 x 58 x 21 x 15 13.5g
5266 ♀ Reithrodon green + uterus broad + vascular; vagina tough dry grass, weeds, along RR tracks. Holes 190 x 82 x 33 x 25 45g.
5267 ♂ Akodon wet grass, yucca, dandelions along road testes 11, SV 18 180 x 71 x 24 x 16 42g
5268 ♀ Akodon habitat as Reithrodon uterus thick, vascular; vagina tough conspic. red CL. 163 x 65 x 25 x 15 34g
5269 ♂ " " " testes 13mm 158 x 70 x 24 x 14 39g
5270 ♂ Akodon xantho. bunch grass - thorn bush desert testes 10mm 132 x 50 x 19 x 15 18g
5271 ♀ " xantho. uterus red, fleshy 151 x 64 x 21 x 16 21.7g

Leleque, 2000 ft., Prov. Chubut, Argentina

- 5272 ♀ Didactyles uterus: at horn larger - 3 x 2mm; ov. no follicles or CL. FA 47 119 x 51 x 10 x 26 14g.
5273 ♀ " nipples large, milk expressible. Moderate fat 115 x 48 x 10 x 28 46 15.2g
5274 ♂ " testes - 16mm CR; considerable subcut. + visceral fat testes 2mm, not descended FA 94 x 36 x 9 x 23 39 8.6
5275 ♀ " juv. - almost able to fly much subcut + visceral fat. RT. at larger, brownish 120 x 47 x 11 x 27 49 13.5
5276 ♀ " nipples small much subcut + visceral fat 116 x 49 x 10 x 29 48 14.0
nipples large, milk at horn larger, not brown

OP Pearson

1976

Nov. 17, 1976

Leleque, 2000 ft., Prov. Chubut, Argentina

sk. only	5277	♀	<u>Histio</u>	{Emb: CR 20, FA 11; considerable subcut + visceral fat (netted) nipple med, no milk. Preg at horn	112 x 45 x 28.5 x 47	FA	16.5g
sk. only	5278	♀	<u>Histio</u>	↓ [caught ^{in attic} Nov 16 PM; killed AM Nov 17:] Rt horn slightly larger - 2x1 mm. ov large - left ov small follicle; rt ov small + med. FA nipple med, no milk. No fat	118 x 53 x 11 x 29.5	48	12.9g
sk. only	5279	♀	"	nipple not found. No fat. Uterine horns med, white, same size. Both ovaries small follicle.	112 x 50 x 11 x 26	45	11.5g
sk. only	5280	♀	"	Some fat. Rt horn large, brown pigmented. Left ov. small follicle; rt ov. none nipple large, milk. Prob. mother of 5281	118 x 50 x 10 x 28	48.5	13.0g
sk. only	5281	♂	"	juv. fuzzy grey. Young of 5280.	74 x 26 x 10 x 17	29	5.7
sk. only	5282	♂	"	[caught in net overnight; killed AM] considerable subcut + visceral fat. Accessories 2 mm, testes 5 mm, flabby. Epid black, ^{much smaller than} testis ^{not swollen} epid. visible in tail sheath, but not bulging	111 x 43 x 10 x 26	46	12.0g
sk. only	5283	♂	"	Testes 4.5 mm, straw colored. Epid. dark, much smaller than testis epid visible in tail men; not bulging	108 x 46 x 11 x 27.5	46.5	10.5g
	5284	♂	"	epid visible in tail men.; not bulging. No fat. Accessories 3 mm testis 5 mm, beige, flabby. Epid dark, smaller than testis	108 x 47 x 9 x 27	44	11.0g
	5285	♂	"	testis 3 mm; Accessories less than 1. No fat epid barely visible in tail men;	109 x 47 x 9 x 25.5	44.5	10.0g

Nov. 18, 1976

el

~~4000 ft. Hoyo de la Pampa~~ 400 ft., Prov. Chubut

5286	♀	<u>Myotis</u>	some subcut. + visceral fat vagina closed, nipple small-med, no milk preg at horn, swelling 10 mm. Emb CR 9 milk visible in ovary	90 x 37 x 8 x 14.5	FA 40	8.2g
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caught in avast in late afternoon; 8:30
prepared next AM. 6:30 Nov. 19, 1976

sk. only	5287	♀	<u>Myotis</u>	tiny m, vagina not open uterus - horn same size, white - 1x2 ovaries - nothing visible	88 x 37 x 8 x 15	6.5g.	FA 38.5
sk. only	5288	♀	"	large m, vag. not open, no milk preg. rt. horn. CR=12 mm	87 x 37 x 9 x 14.5	7.3g	FA 39.
sk. only	5289	♀	"	large m, no milk preg at horn, CR 16 mm	93 x 38 x 8 x 15	38	FA 7.5g
parasite	5290	♀	"	tiny m. uterine horns equal, 2x1, white	85 x 37 x 9 x 14	39.5	FA 6.8g
	5291	♀	"	med m, no milk preg at horn, 12 mm CR	90 x 41 x 9 x 15	40	FA 7.1g
	5292	♀	"	med m, no milk preg at horn 14 CR, FA 7	88 x 36 x 9 x 15	38.5	FA 7.5
	5293	♀	"	med m, no milk preg at horn, CR 14, FA 6.5	90 x 39 x 9 x 15	40	FA 7.7
parasite	5294	♀	"	med. m, preg at horn, CR 13	94 x 39 x 8 x 15	39	7.2g
parasite	5295	♀	"	med m. small, uterine horns equal, 2x1	93 x 37 x 9 x 16	39.5	6.4g
	5296	♀	"	med m, no milk preg at horn. CR 15 mm, FA 7.5	92 x 37 x 9 x 14.5	39.5	7.9g
	5297	♀	"	med m, no milk preg at horn. CR 13	93 x 36 x 9 x 15	40	7.8g

Nov. 19, 1976 (cont'd)
El Hoyo, 400 ft, Prov. Chubut, Argentina

2 noon →	5298	♀ <u>Myotis</u>	preg at horn, fetus 14 CR. med n, no milk	88 x 36 x 9 x 15	FA 38	7.2g
	5299	♀ "	preg at horn, 13 CR med n, no milk	92 x 39 x 9 x 15	39	7.8
3 PM	5300	♀ "	vagina with blood - perhaps abortion med n, at horn swollen 6 x 5 mm but no fetus	92 x 35 x 9 x 14	39	6.7
	5301	♀ "	both horns small & equal small med n.	91 x 37 x 9 x 15	39	6.2
4 PM	5302	♀ "	rt. horn preg. about 12 mm CR (class demonstration) Ov. not saved.			7.6
	5303	♀ "	preg at horn; 11 mm CR. nipples med	93 x 39 x 9 x 15	FA 40	6.7
	5304	♀ "	preg, 12 mm CR. med n.	90 x 39 x 10 x 14	40	7.4

Nov. 20, 1976
La Catarata ^{El Hoyo} 600 ft., Prov. Chubut, Argentina

5305	♂	<u>Notiomys</u>	testis 12	156 x 67 x 22 x 13		25g
5306	♂	<u>Oryzomys</u>	testis 7, SV 11 mm	203 x 115 x 25 x 15		26.0
5307	♀	<u>Oryzomys</u>	placental scars, no emb.	193 x 109 x 26 x 16		20.3g

Nov. 22

Estancia Alicura, 1800 ft., 60 km S ^E San Martin de los Andes, Prov. Mendoza

	5308	♂ <u>Myotis</u>	caught 1 AM, killed 1 AM epid visible in tail ment. stomach full accessories 3 mm. Some visceral fat.	testis white, 4 x 3 mm 90 x 41 x 8 x 14.5	FA 38	8.4
	5309	♂ "	some viscera fat epid. barely visible in tail; caught 1 AM; killed 7 AM stomach empty	testis 3.5 x 2, white; accessories 2 mm 92 x 40 x 9 x 15	37	6.4
	5310	♂ "	slight visceral fat nipple small-med.	testis white, 3 x 2 mm 90 x 40 x 9 x 15	37.5	6.5
	5311	♀ "	uterus small, horns equal, ov. no visible follics. caught 1 AM; killed 9:30	90 x 39 x 9 x 15	38	7.5
	5312	♀ "	uterus horns small, white, some size some present + visceral fat.	90 x 36 x 9 x 15	39	7.4
	5313	♂ "	epid visible visible in tail, but not bulging	testis 3 x 2, accessories 2 93 x 37 x 9 x 15	FA 39	6.8g
	5314	♂ <u>Reithrodon</u>	stomach contents green.	testis 12, SV 20. 222 x 90 x 34 x 26		80g
	5315	♀ "	vagina open. embryos: 3R, 2L	230 x 79 x 32 x 26		79g.
	5316	♀ <u>Akodon</u>	8 emb.: 4R:4L:27 mm CR. under bush along river	153 x 56 x 24 x 13		55g
	5317	♂ "	thorn bush in desert.	testis 7; SV 12 141 x 55 x 20 x 12		29g.
	5318	♀ <u>Elagmodontia</u>	parous, stomach full green material	174 x 90 x 23 x 19		30g
	5319	♀ <u>Ctenomys</u>	last; parous	225 x 65 x 34 x 7		152g

Pearson
1976

Coral de Piedra

Nov. 23, 1976

71 km SE San Martin de los Andes, 1900 ft., Prov. Neuquen, Argentina

		+1 km SE San Martin de las Andes, 1900 ft., Prov. Neuquen, Argentina										FA	
shed in nest	10 PM												
0 AM	{	5320	♀	<u>Myotis</u>	preg, 12 mm CR, right horn	med n., no milk. Slight subcut. fat	98	41	9	15	40	8.3g	
		5321	♀	"	small n. no fat uteri horns small, one ring	preg rt. horn: 11 mm CR. [ovaries not saved]	94	39	9	14	40	6.3	
		5322	♀	"	med n, no milk. No fat	no fett, uteri small, both horns one ring	86	35	9	14	40	7.2	
		5323	♀	"	tiny n.		92	39	9	14.5	38.5	6.7	
water + 6 AM	{	5324	♀	"	much subcut. + visceral fat. stomach 1/3 full rt. horn	large n, no milk preg: 11 mm CR. [ov. not saved]	92	38	9	15	40	10.3	
		5325	♂	<u>Tadarida</u>	epidid. small, stomach fat. Some subcut fat, epid not visible in tail	testis 4 mm, white	104	37	9	19	47	12.5	

Estancia Chacabuco, 62 km SE San Martin de los Andes, 2000 ft., Prov. Neuquen, Argentina

skull only	5326	♂	<u>Myotis</u>	considerable visceral fat. epid not visible in tail	testis 3.5, access 1 mm	92	35	10	14	37	7.5
	5327	♂	"	some subcut. + visceral fat epid barely visible	testis 3 mm, white; access 1 mm.	95	40	10	15	48	7.4
	5328	♂	"	some subcut + visc. fat epid not visible in tail	testis 3 mm, access 1 mm	83	37	9	15	37	6.3
	5329	♂	"	slight subcut + visc. fat epid not visible	testis 3 mm, white; access 1 mm	90	39	10	14	39	7.3
skull only	5330	♂	"	no fat. epid visible in tail	testis 4 mm, white; access 1.5 mm	93	38	9	13.5	39	6.8
skull only	5331	♂	"	moderate subcut + visc. fat epid barely visible	testis 2.5 mm, access 1 mm	88	37	9	14	35.5	6.5
skull only	5332	♂	"	moderate subcut + visc. fat epid not visible	testis 3 x 2, access 1.5 mm	88	38	9	14.5	39	7.0
skull only	5333	♂	<u>Tadarida</u>	moderate subcut + visc. fat. epid not visible	testis 3.5; access 2 mm.	95	35	10	19	43	13g

Nov. 24, 1976

Cracks in attic skull only				No fat					FA	
skull only	5334	♂	Myotis	epid not visible. Testis white, 3 mm, access 1 mm		88	33	9	14.5	38 6.1g
skull only	5335	♂	"	No fat. epid barely visible testis 3 mm, access. 1 mm		83	34	9	14	36.5 6.0
skull only	5336	♀	"	large n, no milk; fetus: 1.4g - FA 9.2; CR 17 pink		93	38	9	15	39 9.3
skull only	5337	♀	"	much sub-cut + visc. fat: 0.7g large n, no milk; preg. rt. horn: fetus CR 17		90	37	9	14.5	39.5 9.7
skull only	5338	♀	"	uterus small, white, horns equal small n, some subcut fat + visc. fat		88	37	9	15	39 7.2
skull only	5339	♀	"	uteri small, white + equal tiny n, modest amount subcut + visc fat		93	39	9	[14]	39 7.1g
skull only	5340	♀	"	preg. 15 mm CR; large n, no milk. Modest amt. subcut fat + visc. fat		93	37	9	15	39 9.0
	5341	♀	"	much fat. fetus 18 mm CR large n, no milk.		94	40	9	14.5	39.5 10.0g
	5342	♀	"	moderate subcut + visceral fat. Preg - 11 mm CR. large n, no milk.		89	37	9	16	39.5 7.9g
skull only	5343	♀	"	much fat, fetus 16 mm CR large n, no milk		89	37	9	14	38 9.1g
skull only	5344	♀	"	much fat; fetus 17 mm CR, pigmented mammae: 1.4g; FA 10 mm. large n, no milk		91	37	9	14	40.5 9.9g

O.P. Pearson
1976

Nov. 24, 1976 (cont)

skull only	5345	♀	<i>Myotis</i>	med m., no fat. Uteri small, white, horns equal	90 x 37 x 9 x 14.5	FA 38	6.9g
skull only	5346	♀	"	considerable fat. preg: 16 mm CR	87 x 36 x 9 x 15	38	8.4g
skull only	(A) 5347	♀	"	uteri small, white, equal size	94 x 36 x 9 x 15	39	7.2
skull only	(B) 5347	♂	"	epid. visible. Testis 3.5 mm, no fat, aces 1.5	91 x 36 x 10 x 15	38	6.1g
skull only	(C) 5347	♂	"	epid. visible; no fat. Testis 3 mm	90 x 32 x 9 x 14	39	6.4
skull only	5348	♀	"	uteri small, white, rt. horn larger, 2 x 1.5 mm	88 x 37 x 9 x [11.5]	40.5	7.4g
skull only	5349	♀	"	med-large m., slight fat	93 x 36 x 9 x 14	FA 39	8.1g
skull only	5349	♀	"	Preg: 12 mm CR.			
skull only	5349	♀	"	large m., considerable fat.			

Nov. 26, 1976

Bariloche 790 m, Prov. Rio Negro, Argentina

5350	♀	<i>Akodon</i>	^{olivaceus beatus} lact., not preg.	164 x 70 x 23 x 14	30.1g
5351	♀	<i>Akodon</i>	^{olivaceus beatus} 4 emb.	147 x 62 x 20 x 15	22.0g
5352	♀	<i>Onychomys longicaudus</i>	6 emb.	217 x 126 x 26 x 16	28g
5353	♂	"	" testis 8 mm, SV 12	250 x 141 x 31 x 17	47g.

Nov. 27, 1976

Saga Moreno, 790 m, Prov. Rio Negro, Argentina

sk. only	5354	♀	<i>Myotis</i>	caught to night roost in dissip. at 11:15 pm. killed immediately	96 x 36 x 9 x 14	39g	8.6g
skull only	5355	♀	"	large m., no milk; stomach almost full preg. CR 11 mm. No fat.	[92] x [30] x 9 x 15	39g	9.0g
skull only	5356	♀	"	caught in net 9:45 PM; killed immediately. large m., no milk. Preg 14 mm CR stomach 1/3 full. Some fat.	88 x 34 x 9 x 15	38	6.7g
skull only	5357	♀	"	caught in net 9:45 PM; killed immediately. No fat. Stomach almost empty.			
skull only	5358	♀	"	Preg. 13 mm CR.	97 x 39 x 9 x 15	39	7.6
skull only	5359	♀	"	large m., no milk. Stomach empty. No fat	94 x 37 x 9 x 15	40	7.8
skull only	5360	♀	"	No fat. Stomach empty.	95 x 40 x 9 x 14.5	40	7.7
skull only	5361	♀	"	med-large m., preg. 12 mm CR.	98 x 42 x 9 x 15.5	41	8.2
skull only	5362	♀	"	No fat, stomach empty	89 x 39 x 9 x 15	39	7.6
skull only	5363	♀	"	large m., no milk. Preg - 12 mm CR	88 x 38 x 9 x 15	38	7.5
skull only	5364	♀	"	No fat, stomach empty, Preg - 13 mm CR.			
skull only	5365	♀	"	large m., no milk	117 x 53 x 8 x 26	47	12.5g
skull only	5366	♀	<i>Hesperomys</i>	torpid in garage, killed after 8:00 PM large m., no milk. Stomach empty, no fat Preg - 12 CR.			

OP. Pearson
1976

12

Nov. 28, 1976

Corral de Piedra, 71 km. SE San Martín de los Andes, 9900 ft

Prov. - Neuquén, Argentina

- skull only
5364 ♂ *Myotis* caught in net over water between 11 PM & 6 AM; killed immediately; FA = 37
spid easily visible in tail, but skinning 88 x 34 x 9 x 14 6.4 g.
Testis 4 x 3, straw color.
Stomach empty, accessories 2 mm. No fat.
- skull only
5365 ♂ " caught in net 10 PM, killed 8:30 AM. Testis 3 x 2, white; access. 1 mm
spid barely vis. in tail. Stomach empty, no fat. 90 x 38 x 9 x 14.5 38 6.6 g
- skull only
5366 ♀ " caught in net 10 PM, killed 8:30 AM. No fat
large m, no milk. Preg at horn - (16 mm CR; FA = 8.5 mm) 94 x 40 x 9 x 15 40 8.9

Paso de Flores, 1700 ft, Prov. Rio Negro, Argentina

- skull only
5367 ♀ *Myotis* Dayroost in roof of gashole. Slight subcut fat + visceral. Stomach empty
large m, no milk. Preg - 15 mm CR. 93 x 39 x 9 x 14.5 40 8.6
- 5368 ♀ " as 5367. Slight subcut + visc. fat. This one slightly paler than 5367
large m, no milk. Preg, CR 15 mm. 91 x 37 x 9 x 14 38 8.6

Nov. 30, 1976

Rio Cataratas Overo, 1500 m, 44 km W Bariloche, Rio Negro
In matorral de lenga. Testis 15 mm, anvil large
183 x 61 x 27 x 15 83 g.
Notomys

specimen given to
Fundación
Bariloche

3600 ft M [845 m according to forest level]

- 5370 ♂ *Phyllotis micropus micropus* malin. testis 8 mm, SV 8 mm.
208 x 88 x 27 x 19 48 g.
- 5371 ♀ *Akodon longipilis* not preg. malin
177 x 80 x 24 x 16 36 g.

5372 Lizard *Sphaerodactylus pectoratus* malin 845 m

5373

44 km W Bariloche, Rio Negro, 1300 m + 890 m

Dec. 1

- 5374 ♀ *Akodon* sp. *olivaceus* Censor 6, Bosque Bajo 890 m Bosque mijo, Censor 6. 6 emb.
182 x 80 x 24 x 16 26 g.
test. 6. in incendio bosque
- 5375 ♂ *Onychomys leucogaster* Bosque Lengua yesterday, killed today 1300 m
209 x 116 x 26 x 16 x 28 g.
- 5376 ♀ *Akodon longipilis* malin 1,300 m 191 x 83 x 25 x 26 38 g.
- 5377 ♀ " " 890 m Bosque mijo, Censor 6. recently preg.
192 x 76 x 25 x 17 x 44 g.
- 5378 ♀ " " 890 m Bosque mijo, Censor 6. lactating, no preg.
184 x 85 x 24 x 16 41 g.

Dec. 3, 1976

Estancia El Condor 800 M, 22 km ESE Bariloche, Prov. Rio Negro, Argentina

clustered
- 8 PM

- 5379 ♀ giant *Histiotus* lact. uterus large + vasc.; smelly recently parturient. No fat FA
130 x 58 x 11 x 35 52 15.9 g
maked yg - FA 19 mm; 3.3 g. ♀
umbilicus present
- 5380 ♀ " lact; maked yg, FA - 20 mm; 3.8 g. ♂
uterus - at horn large, pale 8 x 6 No fat 128 x 57 x 11 x 34 51 14.9
left horn - 4 x 2.5

1976

Dec 3, 1976 (contd)

Estancia El Condor, 800 M, 22 km ESE Bariloche, Prov. Rio Negro

Argentina

5381 ♀ giant Histiotes ^{grey mated} with pyg: naked, FA: 21, 3.7g ♀ 128 x 54 x 11 x 35
 uterus large: rt horn 8 x 5; left horn 5 x 3
 left ov. small follicles; rt. ov. same. FA=50 15.5g

5382 ♀ " " ^{pink mated} with pyg: 4.0g, FA: 21m ♂ 129 x 58 x 10 x 35
 uterus large: rt horn 6 x 4; left horn 3 x 2
 No fat. FA 50.5 15.5g

5383 ♀ Big-eared Histiotes ^{large m, milk} rt horn 4 x 3; left 2.5 x 2
 small follicles rt + left ov. No fat. 125 x 60 x 11 x 37 51.5 15.5g

5384 ♀ small Histiotes ^{uterus small, white, equal horns}
 nipple not found. No fat 111 x 48 x 10 x 27 46.5 12.5g

5385 mummy from floor - bat

5386 ♀ Big-eared Histiotes ^{uterus small, white: rt horn larger - 2.5 x 1.5.}
 med m 118 x 49 x 11 x 31.5 48.5 13.0

5387 ♀ " " ^{uterus small, white: rt horn 2 x 1, left 1.5 x 1.}
 small m 109 x 51 x 10 x 36 50 13.5

Pearson, O. P.

1976

Journal

Argentina

O. Pearson
1976

Journal
Prov. Mendoza, Argentina.

Oct. 21. Left Mendoza about 1 p.m. and drove to San Rafael, all paved, then to Monte Coman. Camped in sage brush about 2 miles N of the Rio Diamante, north of Monte Coman. Lots of vineyards and fruits (apple, quince, almond, peach) around Mendoza and San Rafael, apples and locust in bloom. All irrigated. Mendoza is dry dry, native vegetation gets lusier in a line towards Monte Coman. (two railroads cross at Monte Coman). Saw 2 trice of tinamous (*Eudromia elegans*) between San Rafael and camp, plus a couple of other singles including one right at campsite. When we arrived at camp about 6:30 p.m. a bulldozer was dozing sagebrush in a strip along the main ^{gravel} (dirt) road. It was being followed by about 20 chimangos (presumably looking for squashed guinea pigs, lizards etc). Like a plow being followed by sea gulls.

The sage brush is very rich: Salvia up to 6 ft., "rabbit brush", berberis-like bushes, grass, composites, and at least 5 other common bushes. maybe 50% ground cover, soil sandy, no rocks. Stray cows & horses. many face flies (non-biting) at 7 p.m., no mosquitoes. I set 35 museum specials baited with corn meal, ant set baited with rolled oats, many ants.

Oct. 22 night calm & clear. Saw porcupine (large), a few bats no mice during brief jacklighting. Traps caught 1 *Calomys*?, 2 spring empty. From tracks, a jumping mouse is also present (*Eldredomys* or *Gracomy*?).

about 9 drove back to the main road where the bulldozer was working and followed him along for about an hour. The chimangos left him when we arrived. We picked up two good guinea pigs (one

15
only stunned, the other with hindquarters buried), several other guinea pigs scared off or squashed. also several lizards, one smallish rattlesnake (not collected), one "gophersnake", and one "blind snake". The latter was squirming in the wake of the bulldozer.

Then ~~headed for~~ ^{went to} Monte Coman and headed (we thought) for Goico and media Juva by the "easy" southern road along the railroad. Our information was garbled or incomplete and we spent the day heading more or less east between the railroad and the Rio Diamante. all flat monte (Jarrea and many other bushes, occasional thorn trees, occasionally a flat of pampa grass. Lots of birds and guinea pigs, the latter sometimes 8 ft up in trees and bushes. They (guinea pigs) surely are one of the most important converters here. about 2 o'clock we were having an overheating problem and losing a pint of water every mile or so from the heater. after stopping at several puertos for water (precious horse with thorn corral, goats, horses, cans, a well about 20 ft. deep), we cut a hose and bypassed the heater (which was blocked). about 3 o'clock came to a sandy place that I didn't think we could cross. Went back to the last puerto where we had inquired about the route and were assured that we could make it. 10 minutes later we were hopelessly stuck. worked for 3 hours with shovel, jacks and bushes. still stuck when a gaucho from the puerto showed up, helped dig etc, then hitched his horse to the front bumper with a rawhide rope, mounted, and with motor + horse we progressed a couple of car lengths. Then repeated. Out by 7. Camped in the middle of the road about a mile further on. Anita put out 9 shermans and 12 museum specials while I walked back to thank the gaucho. Taderisa see Oct. 23

Oct. 23

night clear, temp. $< 38^{\circ}\text{F}$. Numerous tree-toads calling during the night. a few last night also. It is a remarkably resonant

16
sound, tu-co pause tu-co pause etc, frequently ending with
a tue tue tue tue. Heard it after daybreak but not during sunny part
of day.

At an abandoned, crumbling Puerto yesterday found a
Todarida between a ceiling beam and a wall. Since we were
lost all day, I guess locality as 10 km N ^{Argentinian} ~~Chaco~~ ~~Caracas~~

Anta's traps held one mouse, in scrub along road, no grass.

Battery was down, motor barely turned over. Waited about an hour
for warmer weather, then it caught. Drove to Orejavia, skinned, then
drove to Monte Coman. Picked up 3 hitchhikers on the way. Saw
a pair of Dolichotis, lots of guinea pigs, one smallish armadillo (not
the mullita and not the pichi, many carachos (perhaps because of
the telephone poles, which are in short supply in the monte).
The guinea should have some big snake + raptor/predators.

Drove south to Orejavia, then along the railroad to Monte Coman^m
(lunch) then to San Rafael for lubrication and new battery, ~~then~~
~~Orejavia~~ then towards El Sosneado but stopped at the RR station
Los Parlamentes, which is 60 km NNE Malargue and, according
to the station master, 1,170 m altitude. It is at the edge of a
huge pampa with almost pure juncus, very sandy soil; north
of the station is sage brush. Put about 12 museum specials
around piles of quebracho RR ties in the juncus, and strung a
bat net in the courtyard of the station house. Wind moderate stopped
before dusk, resumed somewhat during night, ^{set two two-trap} in the juncus.

Oct. 24 Caught 6 Todarida in the net, 5 of them before 9:30 p.m.
one ant-eater lizard in the mouse traps, and two tucos. Station master
calls them tuldugues and describes their call tue tue. He seems to
be a good informant. Says there are bats in the attic winter and

17
summer, but more in summer. Winter temps get down to -10°C . He hunts lots of middle-sized armadillos. People from Mendoza come and hunt many quacaras in nearby hills. Water table is only a meter or two down, somewhat salty, a layer of salitre. Oil & gas wells and lots of drilling. He says there are abandoned coal mines near both El Sascudo and Malargue (up roads to the west, I think). One of them has a hotel up the same road, a man named Castaña (near Malargue?) knows all about one of them.

Left about 9:30, early lunch in Malargue, then south on Route 40. Man in Malargue says summer temps up to 30, winter down to -10°C , but snow only about once a winter, and rain only a half-dozen times a year. Lots of alamo plantations which are said to mature to cutting size (for lumber) in 8 yrs. Camped 3 p.m. in a side canyon about 1 mile west of the Rio Grande about 10 km by road south of Barridos Blancos and 60 km S Malargue. Goat-ridden habitat of efedra, thorn bushes, occasional bunch grass, lots of stoney-gravelly soil visible (maybe 30% plant cover). A narrow quebrada next to camp, dark cliffs across the Rio Grande and on this side also about 1 mi. south of camp.

Set about 35 museum specials in a rocky cliffy outcrop and among efedra + thornbush. Also a lot net across our side gully (with stream) and across a big galvanized culvert under the road. Ants also set traps.

Oct. 25

Night clear, 34° . Nothing in nets or traps. Very few birds of any sort, no chimangos (sterility index). Left about 9:30 and drove south on Route 40. Lunch at Barrancas, through Chos Malal. All semi-arid, sage brush, occasional irrigated patches, usually with poplar trees. Saw one troop of rheas, no tinamous, paper or quince

pigs. Some rat sized *hystriomys* seem to live in the middle of big thorn clumps. Camped at 7 p.m. along the Rio Piedi Neuquen. Sandy hummocks with sage & thorn along the river, then rising to sage brush stony desert. Lots of rat-sized droppings in the middle of the sandy hummocks built around thorn bushes. All day was somewhat overcast.

Oct. 26 Night cleared up, minimum 33° . my traps ± 30 m.s. in scrubby sage caught 1 *Eligmodontia*, Ant's in sandy hummocks caught 1 *Oryzomys* and 5 *Eligmodontia* (including 1 tail only). She had 44 traps out including 10 *Shrews*.

This location is the eastern crossing of the Rio ~~Pied~~ Piedi Neuquen, 45 km SSE Chos Malal, south side of the river. I saw a colony of large rabbit-size holes and rabbit droppings, no tracks and no eyeshine while jacklighting.

Just before leaving we started to excavate over the hummocks with rat-droppings among the thorn-stems. a very large ^{grasshopper} ~~phyllocnistis~~ ran out to a neighboring hummock; caught him by hand. ^{no rocks} anywhere near.

Left about 9:30 after skimming. Saw a rabbit newly dead on road about 20 miles farther south, a few miles north of Churruaca.

along the Rio Colorado about 5 miles N of the R. Agrio we stopped and looked in a large mine west of the rd. and a small mine ^{east} of the road. The latter had sparse bat droppings on floor & wall, a girl near the large mine said no bats, but yes in cliffs at the R. Agrio. The big mine was cool and would have been a good *Caryacus* site (but too wet for nursery colony). Lots of rabbit signs along the R. Colorado.

Had lunch at the Rio Agrio and looked in "potholes" and crevices in the cliffs for bats; saw only 2 places with a few

droppings, no bats.

Forgot to mention that the station master at La Parra (sic) said that there were bats in the roof of his house winter and summer, but more in summer.

Then drove south through Zapala to the arroyo (Rio) Picun Leufu and camped along the river at a Puerto that had been flooded out a few months? ago by a rise of at least 12 feet in the river. Willows + poplars lying around, partly cleared up by chain saw and road scraper. Put up a bat net at a break in the willow trees near the river. Ante set 3 or 4 traps near some mouse tracks in the sand.

The terrain and vegetation begins to look like Patagonia at Zapala: more grass and bunchgrass, bushes more compact less scrappy, low mesas, goats giving way to sheep, horses, and cattle.

Oct. 27 night clear & calm. Ante saw bats twice. ^{minimum} Temp. 23°F .
Sometime during the night a horse leaped over the bat pole. Nothing in net. No mice. Saw rabbit.

Left early and drove to Bariloche via Junin de las Andes and San Martin de las Andes. Lots of European rabbits squashed on road and a few seen alive. Much wandering on back roads because of misleading road signs or no signs. Put up at Hotel Acosagua.

Tulips, cherry trees, Scotch broom in bloom in Bariloche. One of the Nothofagus just coming into leaf.

Oct. 28 night clear but somewhat overcast during day. Spent the morning with Drs. Eduardo Riquelme and Gilberto Gallopin at the Fundacion Bariloche and with Sr. Gregorio, Director of the Museum of Patagonia. They developed a few traps for bats. Put two nets in the

evening at the ^{acholay} Chalet 4 km west of town (owned by an
Dept. of aviation official). Lots of droppings at what appears
to be a night roost, and a hole in a beam where the
caretaker says bats emerge. o

- Oct. 29 night clear & cold. In the morning 1 Tadarida ⁱⁿ ~~at~~ the
net at the night-roosting corner of the house, but none in the
net covering the north porch where bats were said to emerge
from a beam. Shopping, drove to Ilo-Ilo and cut ~~for~~
some Chusquea ^{canes} ~~cassia~~ for bat poles. Returned to the Acholay
house in the evening, tidied the nets, and watched for bats to
emerge. Some were flying but saw none emerge. Overnight,
temp. about 56° F. The caretaker of the house says bats are
present winter & summer, but more abundant in summer,
- Oct. 30 morning clear, temp. °C, two Myotis in the night-roost
net. Caretaker says they were caught after midnight.

Coffee with Wm. and Hilda Rumbolt, 3 1/2 km W Bariloche. She
has seen Sasmerus here, feeds hummingbirds (2 species), and says
the hummers are present winter & summer. People take
torpid hummers to a taxidermist friend of hers. Lunch with
Rapaports, then out to Hotel Lago Moreno, near Ilo-Ilo,
turnoff at 20 km. The garage at the hotel had a good bat
at the, one torpid & Myotis at 4 p.m. (air maybe 60°), and
lots of droppings. Informant there says bats are present winter
and summer, has seen a group of them torpid, head down,
when he pulled boards off the side of a house (the Ilo-Ilo Hotel,
I think). Snow here reaches as much as 20 or 30 cm. There is
a sharp cline of rainfall from 500 mm at the Bariloche airport
to 1000 mm at the town to >1500 mm in the mtns to the east.

21
at 7 p.m. (cloudy + cold) we strung 3 nets across the front of the garage. Stood watch until 9:30. Saw insects flying and numerous bats flying. One ♀ caught in net before we left at 9:30. Temp. in Bariloch at 10 p.m. was $9\frac{1}{2}^{\circ}\text{C}$.

Oct. 31 morning partly cloudy. Temp. at 8:30 AM was $10\frac{1}{2}^{\circ}\text{C}$. Fourteen ♀ myotis in the nets. The local caretakers (Paulo + Antonio and spouses) say that there were more bats in the net at 11:00 p.m., that they were escaping, and so they killed the remainder. None visibly pregnant, none fat, all with full stomachs. Three full stomachs together weighed 2.2 g.

Left about 2 p.m., drove through Bariloch then toward Pileanigen. The RR station at Mirihuan is near a deep narrow canyon with an arched wooden bridge. Too many Sunday picnickers and a soccer game to stretch nets. (Station master not there either). Drove to the next station, through bushgrass and "pinon-juniper," and stopped there. Station surrounded by willows + poplars, good cliffs nearby, a shallow lake of several acres with ducks, banderinas, ~~and~~ loquips, etc. Nobody around. I put out about 20 traps in bushgrass - rock - bushes and a few among railroad ties. A few small, all-yellow Calceolarias blooming on the knoll where my traps are. Found one with nibbled tips, partly healed. Evening windy. One net across end of lake.

Nov. 1 night was clear without wind, but overcast at dawn. Nothing in nets. Traps held 2 Phyllotis and 2 red-backed long-nosed akodon. Temp at 7 a.m. was 6°C . Willows and gray birds just leafing out, a robin (Turdus falklandi) feeding fledgling. This station on the RR is Cerro Moreno, 25 km ENE Barilocha, no mice in the Calceolaria traps.

22
Drove to Rio Pichil Guefu, skinned, asked about bats at the Estancia (none, 4 Indians said none), drove to Pileanizem, asked about bats at the bakery, the store, and the RR station. Everybody except the baker said none, he said they live in cliffs and fly around town at night. Drove to Estancia Pileanizem, which is a couple of km SE of town. An English-speaking employee (not the administrator Mr. Williams) said he had seen some 2 yrs ago in a rocky cliff a couple of km east of the Estancia headquarters. We drove to the site. Good pockmarked columns, lots of crevices, holes, and caves, but search revealed no bats. Vexichas and oadles of accumulated vexichas droppings. Vegetation is bunchgrass and low rounded thornbush. A $\frac{1}{3}$ rd grown hare is freezing under a thornbush about 5 yds from our tent. Two tuco tuco in the grassy flat, sandy, along the stream. They give 3 or 4 very rapid raspy grunts, a 1-second pause, then repeat, not as clear a sound as the meadow tuco make. They sang in the middle of the afternoon, warm & sunny breezy, contagious. Four at same time.

Put out about 25 museum specials in bunchgrass-thorn-berberis in rocky-chippy place. Strung a bat net at 8 p.m., first star at 9 p.m., temp. 8°C , lots of moths and other insects flying. Burned lanterns near net to attract bugs and, hopefully, bats. Saw no bats at dusk.

Nov. 2 Temp. at dawn 5° , cloudy. Tucos singing at 4:30 AM and at daybreak. Nothing in net. my traps 5 red-bellied akodon and 1 big Phyllotis. One tuco in trap. Ant's traps held 4 red-bellied akodon, 3 big Phyllotis, plus one yellow-nosed akodon. This one out in



5km SE Pilemuyen, Prov. San Negro, Nov. 1, 1976



Estancia Leleque, Prov. Chubut. Nov. 17, 1976

Histrionicus montanus in attic.

26
Evening was mostly clear + calm, temp at 9 p.m. 8°C . Saw a few bats flying about 9:30, caught one Histiotus at about 11:00 p.m.

nov. 3 Night was mostly clear, but sprinkled before dawn, and overcast + sprinkle at 7 a.m. no more bats. Temp. 8° at dawn. Insects were flying last night at dusk.

almost everyone we talk to is familiar with a Zosiurus of some sort. Drove south asking for bats, but most people said none. Willows are in leaf and fruit trees blooming. Glass blooming in Esquel, and tulips. Day of bunchgrass - rabbit-bush - thorn bush, poplars + willows around Estancias and pueblos. Camped in windy pampa next to shallow pond with flamingos. Temp at 9 p.m. 6° windy. Set about 25 traps and traps about 40.

nov. 4 Wind stopped early in night, but morning drizzly and calm, 6°C . more pampa as we drove south all morning. Tried the road from Rio Lengua to Lago Fontana but too awful, so continued south. Last night's catch was 5 Elgmodontia. Location was 38 km S Gobernador Costa.

3 Elgmodontia discarded: adult ♂♂: testes 6, 7, 7

Saw a few quervos maybe 10 mi. N Rio Mayo along route 40, but more (maybe 30) after turning west toward Lago Blanco. They were in the most miserable parts of the pampa (sparsest + lowest vegetation), sometimes mixed with sheep. Lilacs and fruit trees blooming in various towns, and a big-spined barberry in the desert. Everyone agrees no bats.

Vegetation becomes greener + graminier as you drive toward the mountains. West of Lago Blanco it becomes almost pure bunchgrass with other green grasses in between, occasional

yareta or low thorn hummocks and a few 5' thorn bushes or thickets. Stopped at Estancia Valle Huermapu, no bats.

Then drove west hoping for trees for the night, but all pure pampa to a big military base at the border. Beautiful snow mtns beyond. Turned back and camped 4 km W Lago Blanco, almost pure bunchgrass in rolling hills, I put about 25 traps in bunchgrass and in a sparse copse of thornbush. Anita set 20 traps in pure bunchgrass (sandy soil). Day cloudy.

afternoon windy, temp 6°C at 9 p.m., still windy, scattered clouds.

Nov. 5

Wind all night + still windy in morning. Sunrise temp 3°C . My traps had 2 Elgmodontia (bunchgrass), 1 Akodon pontho (thorn), 1 house wren (thorn), 1 Phyllotis (thorn, stones but no rocks). Anita caught 1 Akodon pontho and 1 Reithrodon.

The chest-high thorn copse is surprisingly good wind shelter. Surely the wren spent most of its life in this isolated copse.

Discarded: 1 baby Elgmodontia (7gr.)

1 ♀ Akodon xantho with scars + CL. Not lost.

Left 10 a.m. Saw 1 rhea and the guanacos again on the way back to Route 40, then south to Perto Moreno 2 p.m. Saw 2 more rheas and a few more guanacos; one half-grown. Millions of dandelions in bloom and seed at Perto Moreno, also lilacs. Between Perto Moreno and Bajo Caracoles we drove about 5 km took a road toward the Cuevas de For Manas but when we stopped at a puesto for road directions the man said the road was impassable. The grader was working on it, however, The cave seems to be on the Rio Pinturas.

Stopped for the night where the road crosses the Rio Echer, 65 km S

Perto moreno. The administrator? of Estancia Casa de Piedra said no bats; 2 guys stringing fence said sure, they find bats in rock crevices in the volcanic rim-rock. Numerous shallow ones visible. We awoke on a landing strip in sandy bunchgrass - low shrub. The little yellow Calceolaria is beginning to bloom just as at Station Perto moreno east of Bariloche on Nov. 1. Put out about 25 traps along rim rock and in thorn bush on pampa; Ant's put out 34. String 1 bat net just below the rim rock. no wind, sky 3/4 cloudy, full moon. Temp. at 9 p.m. 8°C. Felt almost eerie without wind.

Nov. 6

morning clear, no wind, temp 1°C. Saw no bats last night, and net untouched. Saw 2 troupes of Tinamotis yesterday and one single. They were calling last night and this morning: a distinct or trio, less raucous, more muted than T. pentlandi.

My traps had 1 baby (Akodon)^{pampa} Ant's had 2 ~~adult~~ Akodon (red-bodied): (1 adult breeding ♂, 1 juv with small testes) and 1 large ♂ Phyllotis darwini (large testes + accessories)

Probably parula

Drove south to the Rio Belgrano - Rio Chico for lunch. Saw a rhea with > 9 small striped chicks. Vegetation all very low with bunchgrass, herbs, cushions. No attempt at cultivation except in towns. The sheep seem to be completely untended, in groups up to a couple of dozen, surely 10 miles or more from nearest human. Yesterday we drove 8 hrs, all except the first 1 1/2 hrs, on the main N-S route 40, and we passed 2 vehicles, not counting a truck stuck in the mud and another big truck trying to ~~pass~~^{overtake} it. Three hours of driving this morning we passed 1 vehicle. This person and one other in the "town" of Bajo Caracoles were the only people seen all morning: no gauchos,

no nothing. Things have hardly changed since Hatcher's time.

Almost everyone we talk bats to mentions capturing them with a "white trap", perhaps hanging white sheets?

after lunch drove to Schneider Gregores, then Estancia La Julia, some of it through arid stretches with badlands, but mostly stepping into a few quaceros & rheas (plus ubiquitous sheep and new lambs). Then west on Rte 288 to Laguna Grande, a cluster of huts + houses by the road. Turned north on a side track about ^{2.5} km W of the fork at Laguna Grande (or Hotel La Horqueta) and blundered onto a long-abandoned brick house with a Histiotus hanging in the sheltered entryway at the front door and another in the attic hanging on a rafter. Temp. 17° both places, both torpid, both ♀♀. The house is upwind of two tennis-court-size grassy fields rimmed with sickly willows, poplars, tamarisk-like, and alamos. The house used to be at the edge of the lake, but the water is now 75 yds. away. Flamingoes. Everything scattered with muckable quantities of rusty tin sheets, broken bottles, boxes, old auto tires (such as size 6.00x20), wagon wheels, etc. Windy. Considerable droppings on front porch and in attic.

Strung 2 bat nets at 9 p.m., windy. Temp at 9:30 (dark) 11°C. Watched nets until 11:45. One bat approached nets many times but seemed to detect them (they were billowing violently in the wind). Wind boisterous from 10 to at least 12, and strong at least until 1:30 a.m. Temp. at 1 a.m. 7°, at 3:00 a.m. 4°, at dawn 3°. at ^{a.m.} 1 p.m. nets held 3 ♀ Histiotus, at 1:30 another one ♀, at 3:00 another ♀ plus one that was just hanging from the net by its hind feet.

7
nov. 7.
morning clear, but wind built up before 7:30 and then more overcast. The one caught between ^{1:00} 1:30 and ^{1:30} 3:00 was killed immediately and had stomach 1/3 full.

(Lakeshore)

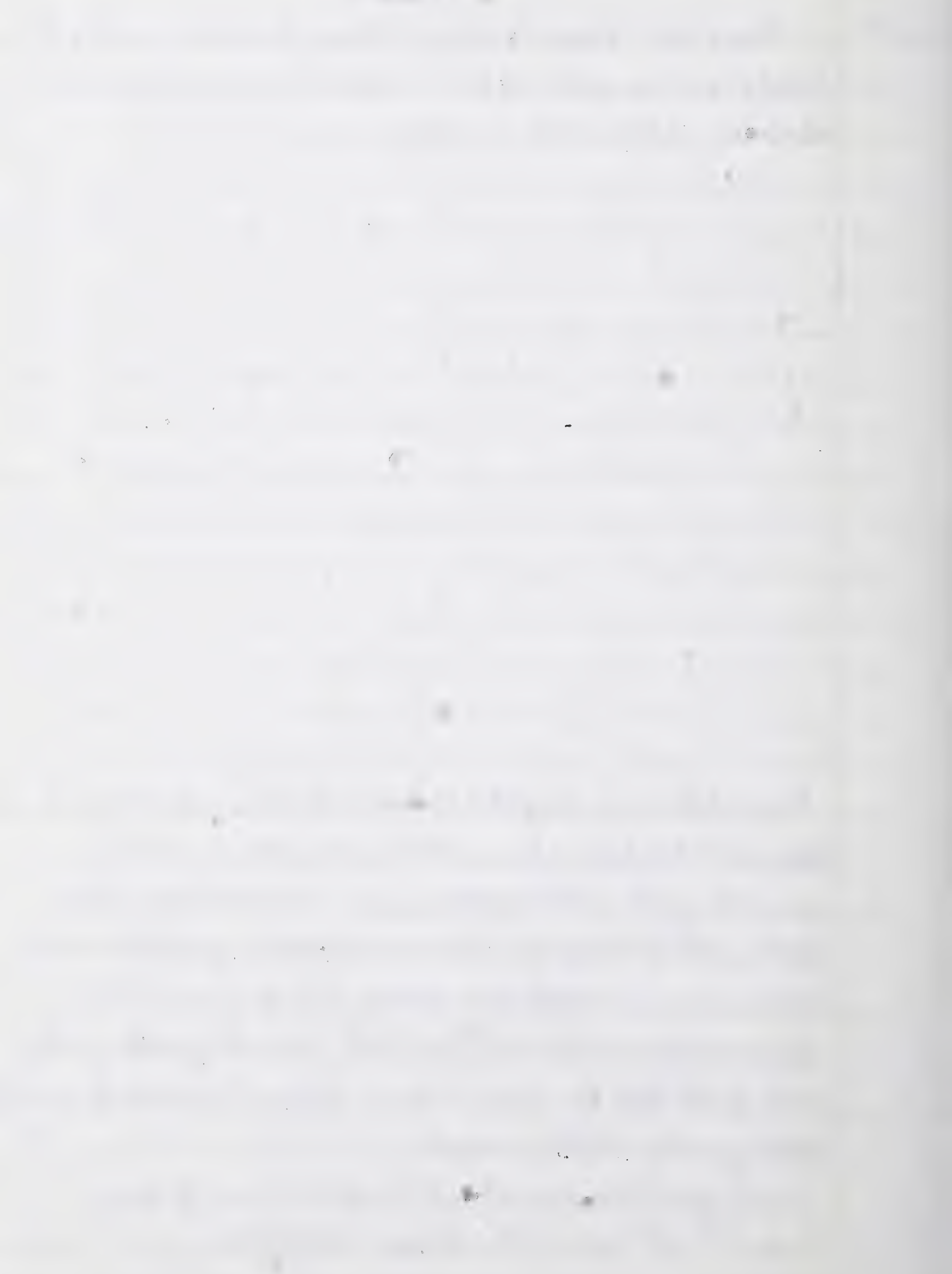
Nov. 7.

Nov. 7, 1976 - Laguna Grande. Returned to attic one 17g ♀ Histioglossus w/ large nipple, FA 45 mm. banded 250. caught in net ~~at 3 am~~ between 1:30 and 3 AM.

Processed bats in AM. Caught 3 lizards under tin, much warmer than air. Then drove 5 km west to Estancia Meneses where 3 men all agreed no bats in this region! Then drove back to the fork (Hotel La Horqueta) where assorted people agreed there were bats in 2 or more of the three houses. Put up a net at the Gendarmerie and another at the hotel. A small ~~grass~~ garden next to the hotel has lilacs in bloom, full grown Swiss chard, onions, seedling carrots, rhubarb, currants.

Wind gradually died down at 7-8 p.m., at 9:15 p.m. 3/4 cloudy, Temp 12°C. at 11 p.m. 9½°, not windy; ~~at 3:15 am~~

PLATE I





Laguna Grande, Santa Cruz. 11/7/76

Bats in attic and on front porch (*Histiotus montanus*)



52 km WSW El Calafate, Prov. Santa Cruz. 11/10/76

Nov. 8 Nov 8, 1976 - Laguna Brackets. (Pueblo) Caught in net overnight. Processed in AM.

- Released: ♀ nipple large, no milk, not obviously preg: band 249
- at the lakeside house 2 1/2 km W of the Pueblo ♀ late preg. large nipple: band 248
- ♀ nipples large, ~~late~~ obviously preg: band 247
- ♀ obvious preg, large nipple: band 246
- ♀ " " " " " 245

at 5:15 a.m. hazy, calm, 5°. Bats emerged from the high eaves of the south side of the gendarmerie house at dusk (\pm 9:45) and 3 or 4 promptly got caught in the net there. A few more before midnight, and two along about 5:15. Only one near the hotel, and it early in evening. Total catch 3 ♂♂ and 7 ♀♀. The gendarmerie house with the complete roof seems to be a nursery colony, the lakeside house 2 1/2 km west is a night roost and possibly the attic an alternative nursery roost.

When released into the attic, 3 disappeared back into the dark, but two scrambled along rafters + beams quite actively, looking like vampires; certainly more mobile than Plecotus. The galvanized roof was warm to the touch, everything else cold, sky overcast. This was 10:30 a.m.

Drove to El Calafate. Saw rheas + guanaco. First 7 hours saw 2 vehicles, one of which passed in our direction while we were stopped looking for a gas tank. One more in last hour before El Calafate. No trees. Not windy. Evening in El Calafate cool, no wind. Several informants say no bats - by cable, current, and tractors on both sides of river. Day's drive included 2 ferry boat rides in old LSTs powered.

In El Calafate lilacs, + apples are blooming, dandelions, tulips, cherries mostly finished blooming. People are planting vegetable gardens. And more

Bats Banded

1976

Argentina

#	Sp.	Location	Sex etc.
250	Histio.	Laguna Grande	♀ late preg - see notes
249	"	"	♀ nipple large, no milk, not obviously preg
248	"	"	♀ late preg
247	"	"	♀ "
246	"	"	♀ late preg.
245	"	"	♀ "
244	Histio.	Leleque	♀ FA 49; weight 14 g large m., milk not expressed (egg far)
243	"	"	♀ 47; nipple med, looks preg. (not torpid).
242	"	"	♀ 46; very large m., milk (not torpid)
241	"	"	♀ 47; very large m., milk (torpid)
280	"	"	♀ 48; nipple large, no milk, looks preg (not torpid)
279	"	"	♀ 47; nipple large, no milk, looks preg. (not torpid)

27 Leleque
26 caught in net
by until 9 AM.
chased 7 AM



Nov. 9 Stayed overnight in motel in El Colafate. morning overcast, no wind. at 10 a.m. drove out ^{to} the moreno glacier (Ventisquero) overcast but no wind. yellow berberis ^(= colafate) in full bloom, plus a shrub-tree with bright red tubular flowers ^{= Ciruelillo}. Zonotrichia singing. Camped 3 pm in a campground 52 km WSW El Colafate on the edge of Brezo Rico. a mixture of beech trees ^(N. latifolia), berberis scrub, and the red-flowered bush. I set about 40 traps, mostly in shruny places with lots of duff, small rattlesnake fern, mossy stream. Anita set 36 traps along lake and in scrubby spots around camp. a few sprinkles. many of the beech trees have lots of golf-ball-fungus, the ground often littered with fresh or dried ones.

Visited the glacier at Ventisquero. Lots of action with numerous icebergs breaking off. The glacier has occluded an arm of the lake (Brezo Rico), and its level is presumably rising and will eventually break through the ice barrier some day. It has risen 10 ft. or more in the past because large dead trees are standing in the water and somewhat above the present level.

Evening overcast, no wind. Put up 1 bat net in our camp clearing (beeches and colafate bushes). 9:40 p.m. 9°; 10:15 still light enough to read notes, 11°C.

Nov. 10 6°C at 4:45 a.m.; 2/3 clear, no wind. at 6:20 clear, no wind, 6°C. Cloudy by 7:00. Clear by 10:30 but then windy, nothing in bat net. my traps had 1 short-tailed long-clawed notomys at edge of little stream, 2 large Oryzomys in thick wet vegetation, and 2 red-backed akodon (longipilis?) in thick wet vegetation. None of my traps along rotting logs in deep duff under beech trees was touched. Anita caught 2 red-backed akodon under ledge near log jam at edge of lake, and an akodon footei? under berberry at edge of camp.

red-backed akodon:
breeding; ♀, 3 emb;
♀ not preg, but
large CL

Lots of Zonotrichia singing. Hares very abundant; about 1 line here per km between the park gate and Ventaneros.

Drove to Estancia Abies, no bats they say, then to Estancia Alta Vista. no bats, they say, but by then too late to look elsewhere. Put out about 60 traps total through lush green grass, sheep-grazed sagebrush, and along a huge woodpile. Also one bat net. Then dinner with the Estancieros and wife (Sr. Alejandro Stipicic). Evening clear, breeze, Temp 6° at 11 p.m.

Nov. 11

morning clear, drizzle, 6°. no bats. One Abodon hantla and 1 immature Rhithodrom (in lush green grass 1½ ft. tall). Then rain. Stuck in middle of road between Estancia Abies & Colafato. after about 2½ hrs the light rain had washed enough mud out of the ruts so that stones & gravel were uncovered, which allowed us to escape. Checked into motel in Colafato, then went to see the police chief's collection of Indian artefacts, guns, watches, & coins. Then to the Park Hq. where we were put in touch with a park ranger with 20 yrs experience. He seemed thoughtful, careful, precise with data - a good informant. Says there are bats in the forest under the bark of trees and in hollow trees, winter and summer. Doesn't know of them in houses. They are torpid when caught. no other bat leads in town, saw no bats at dusk at 10 p.m. Temp. not cold.

Nov. 12

Drove out to the park entrance in the morning and hunted for bats for about 2 hrs in good Urospogon forest. above the road. Lots of over-mature trees with hollows, loose bark, etc. no bats.

Afterwards, talked with a woodcutter who lives just east of the park gate. He knew bats, showed me on his woodpile the kind of places they stay, said they were found winter and summer, it ~~was~~ sometimes they were only partly alive, "like a tortuga".

Talked with the owner and the foreman of ^{Estancia} ~~the~~ Cerro Buenos Aires. They both said no bats at the Estancia. The foreman said he had cut wood there for 4 yrs and never found a bat.

Drove to the Indian caves east of Calafate. Lots of good crevices, holes etc. Found brown or great-horned owl pellets. Then drove till dusk on the road toward Santa Cruz. Camped in quite open short-grass with only a few small spiny shrubs. Set total of about 30 traps. Night calm, overcast. Biting gnats.

Nov. 13

Morning overcast, 14°. Night was calm, but ~~but~~ blew down about 6 a.m. Drove all day to ^{Pedro Bueno} ~~Santa Cruz~~ then with our Route 3 to beyond Fitzroy. Saw a few rheas and guanoes, tinamous < 1 week old. Country very open, mostly flat, no trees, lots of sheep. Mostly clear. At 9:50 clear, still windy, 16°

more comments on the emptiness of Patagonia: From Calafate to Pedro Bueno to Fitzroy, about 15 hrs of driving on good road (total 673 km) we saw one gaucho driving a troop of horses (9:30 a.m.) and one group of 5 doing something with a group of a hundred or so sheep (4:30 p.m.). In Pedro Bueno, of course, where we had a tire repaired, we saw people, and there was a convoy of 20 ± oil exploration trucks on the Calafate - Pedro Bueno road and other trucks on route 3, but other than those mentioned no body was outside

36
outdoors doing anything. It was a Saturday, mostly sunny, and windy.

The station master at Fitzroy said no bats in Fitzroy but yes in the station at Perito Moreno.

Nov. 14

about 40 traps in thornbush-grass-quinto etc caught nothing. Evening was breezy but night calm. Temp at 6 a.m. was 7°. A tinamou nest with about 15 offleegreen large eggs, the bird seems to make a gentle early-morning call note "how now?".

Day mostly sunny and only moderate wind. Drove north on route 3 almost to Comodoro Rivadavia, then west to Fagnano and camped at Nueva ^{Lubeca} ~~Lubeca~~. Various stops revealed no bats and no knowledge of them. at Estancia Lavita they said no bats there but lots in the bell tower of a church in Rawson. They don't like having European hares. Saw clutch of goslings of the common Chloephaga; also with half-grown young. The RR between Comodoro + Sarmiento seems to be abandoned.

Set about 25 traps in thorn-bush-grass-thorn not sandy desert, and 2 bat nets: 1 at the post office and the other at an abandoned house 100m away. N. Nueva Lubeca consists of a substantial stone post office, 1 abandoned house, a shed containing mouldy sheepskins and 2 live chickens, litter, no people, poplar trees, and a few alamos. aphid-infested. Saw no bats flying, no signs. Evening clear + calm, 10° at 10 pm. Nueva Lubeca is 60 km S ~~of~~ ^{from} San Martín (which is near a previous collecting locality, Gobernador Costa).

Nov. 15

Morning calm, around 4° at sunrise. No bats. Traps held 4 *Elignodonts* and 1 *abdomen* ~~fauna~~. caught in wild sage-bush brush.

37
grass. No bats. Picked up skulls from 3 skinned fox carcasses.
Discarded 2 ♂ Elymodontia: tests 6, SV 8; testis 7 SV 7.

4 km N of town
Drove to Monter and visited Sr. Estancia Monter (Sr. Horvitz). The fairly old ranch house had good attic etc but they had no evidence of bats in it. They had occasionally found bats in a hawthorn tree alongside the house, and at least once had found dead bats under the tree after a freeze (at least 2 or 3 bats). Mrs Horvitz used to live at Estancia Laque, said there were bats in the attic there, and that she used to see bats hanging in the current bushes there when she was picking currents in summer.

We set all traps (± 70) in three habitats: wet green-grass + juncus + dandelion along the road to town; drier grass, bunch-grass weeds along the railroad tracks across the road from the ranch; and bunchgrass - sagebrush a few hundred meters east of the R.R. The sagebrush are waist-high or more, dense, with pale tubular blossoms.

Then drove back to the old mill 2 km N of town and camped there and put up 2 bat nets. Anita also put out a few traps in thick grass - dandelion - orchard. Evening calm, $\frac{2}{3}$ overcast, 9°C at 9:20. Saw 1 bat flying near our nets at about 10 p.m.

Nov. 16

Morning calm, $\frac{1}{2}$ overcast, 6°C at 6 a.m. No bats in net. Traps in lush grass along road caught only red-backed Abodon (plus one small Elymodontia in a dry culvert under the road. The dry field caught 1 Rethrodontia + more red-backed Abodon, the sagebrush area produced 2 Abodon punctatus, and the lush orchard caught red-backed Abodon. In addition to those prepared, discarded 6 red-backed Abodon, one of them a juv.

Met Sr. Brade, owner of the old mill, and his administrator and the latter's wife. The administrator used to live at Estancia

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Fdo Cabuel (east of Zeleque) and says the old Estancia headquarters there is being preserved as of historic interest and is full of bats.

After lunch drove to Estancia Zeleque and met Charlie and Nora Mackinnon. He is the man in charge of all the Estancias of a former English Company, now Argentine. The Estancias include ^{Alcorno} Alta Cura, Pilcaniyeu, Mañen, and Zeleque. In addition to numerous out-buildings, Zeleque has a brick main house with galvanized red roof over shingles, an attic, and Histotus in the attic. The house is surrounded by rows and rows of peppers, vegetable & flower gardens, Hawthorn trees, cypress trees, and green lawns, a trap door near the kitchen lets into the attic which is liberally sprinkled with bat droppings, and was quite warm. One mother & young was hanging in the open, others in cracks, especially between the double ridge pole and tin roof. The bats were active and scurried like mice along the ridge pole etc. We ~~had~~ caught some with long forceps, then stretched two nets outside the house along a veranda where the Mackinnons reported seeing them fly frequently. They report that bats are in the attic winter and summer, that in winter they hang near the where the kitchen stove pipe goes through the attic. They say winter temperatures go down to -16°C , snow up to a foot deep. Spring and even summer frosts are common. Apple bear only about once every 7 years because of untimely frosts. Lilacs rarely bloom for some reason. In the vegetable garden were strawberries (blooming), lettuce, Swiss chard, cabbage, carrots, peas, rhubarb, endive, currants, gooseberries, onions. Pansies blooming, marigolds - daffodils finished.

Evening calm & clear. Temp. 10 p.m. 9°C . Caught several bats about 10 p.m. including 1 mole, several more in middle of night

including two white temp. near 3° calm clear.

Nov. 17

Dawn calm clear, temp 0°C , Estancia summer thermometer -2° . No more bats in net after "middle of night" [watch had stopped].

All ~~the~~ adult bats from attic were females, from non-preg through almost-volant young. Three males roared outside. Tagged 6 females and released them. Two landed in trees, the other disappeared promptly under eaves on both sides of the gable at east end of house. One scrambled up the brick wall to get in. Processed ¹⁵ others including a discarded juvenile Histiotus. $70 \times 25 \times 9 \times 16$ forearm 29 6.3 g. naked. I think we handled at least half of the entire colony. All except one survived ~~holding~~ holding overnight in the bat net down to 0°C and were warm enough to fly early in the morning.

Drove to El Bolson and stopped at Sr. Kovac's house. He and his tapidermist son were in Buenos Aires, but another son directed us to the farm of another son, a farmer, at Hoyo de Bolson Epuyen 12 km south of El Bolson. He took us to two possible bat barns, but we ended up at a third in Hoyo ^{on road to La Catarata}, an old barn with abundant droppings and good reports from the owner. Droppings fairly large, didn't smell like Tadarida.

Temp at dusk (9:20) 12° , calm, clear, mosquitoes for a short time.

Nov. 18

Dawn partly overcast, calm, 7°C . No bats seen during careful watch, and none caught in net. At one of the barns visited yesterday, Kovacs had removed a big cluster of bats "like a swarm of bees" a year or more ago. This was 4 km S of the Hoyo Kovacs' quinta.

Peonies + larkspur in bloom, apple trees with marble-sized apples. Frosts seem to be a problem, but not as severe as at Laque. Note that the altitude here is only about 400 ft. Saw eucalyptus trees as tall and straight as at L5B. Yesterday there were only a few wild roses in bloom, but today lots of them. After breakfast checked out the "old mill" on the Braade



property. It is only a few hundred yards from our nets of last night. We were told ~~by~~ by the owner (? or son?) that it had no bats and was dangerous to enter because it was falling down. Went back to the barn where Kovacs took us yesterday and where we had not seen or heard bats but were told Kovacs collected a "swarm" of them last year. Today at 10 a.m. we could hear them squeaking and could see a few scurrying between the wooden roof and the corrugated iron. Collected one with long forceps - a pregnant ♀ myotis, very dark. The daughter reported that several were hanging on beams out into the open at 8 p.m. last night shortly after we had been there. This farm is about 4 km S of the Hoyo de Epuyen and has the huge tall blue gum eucalyptus at the gate, east side of road.

Visited Lago Puelo in afternoon. Huge number of wild roses are mudding this whole area; no hares seen, although people say they are present. Not squashed on road as they are elsewhere.

Returned to the Eucalyptus barn, ^{at 8 p.m.} granero of Antonio and Flora albion de Mayorga), which is about 4 km S of the Comisaría of El Hoyo (no longer being called Hoyo de Epuyen) or $\frac{1}{2}$ km N of the El Hoyo school. They have a 6-foot diameter sequoia gigantea planted about 1917 and a quingbo. myotis were awake and in a cluster on a beam near the ridge. Collected about 20 of them, maybe half, all females. Strung 2 nets outside the barn hoping for moles. Evening cloudy, some wind in trees but not at ground level, temp at 9:20 14°. Bats emerged from west end of barn and flew higher than nets. Anta set traps in barn.

Daughter Beatriz a good informant says bats are present winter & summer. The fact that they use the granero for storing apples indicates that the temp. does not drop very low. granero = barn.

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Nov. 19 morning calm, temp. at 5:45 $12\frac{1}{2}^{\circ}$. Bats were circling at west end of barn and entering under the eaves. None in nets.

Edmund, then gave a little bat demonstration at the local grade school where Mrs. Mayorga is vice principal. Then to El Bolson to meet Kovac's son but he didn't show. more slaving. at lunch met the head of the tourist information bureau who gave us locations of two potential bat houses, one about 3 km N of town (Sr. Azcona), a wonderful old water-wheel mill amidst high fields (no bats), the other an abandoned house south of town about 4 km owned by an Alfredo Basso. It had lots of droppings (*Histiotus*?) in the attic, but no bats.

Both the Tourist Information man and Sr. Mayorga agree that the flowering of Colihue bamboo is followed by outbreaks of "rats". Mayorga says the Colihue flowers every 40 yrs, last 1942, and that the shores of Lago Puelo were heaped with dead rats. Tourist says every 20 yrs and that last year was a flowering near El Bolson. The Colihue then dies.

The big hotel in central Bolson has a great attic, but no bats. Our waiter mentioned some caves, Cuevas de Hielo Azul, about 20 km from Bolson, high up in snow. a local, Francisco Jaquez has visited them.

Checked into a campground at La Catarata in El Hoyo at 8 p.m. and put about 15 traps along the torrent in *Notofagus* - *fuchsia* - *guenthera* etc. under boulders. All dry except 1 near splash.

Evening cloudy, calm, probably about 13° , no bats seen. They are NW of Bolson. There is a hut there. Visited by alpinistas.

Nov. 20 morning overcast, calm, not cold. Two *Oryzomys* and 1 *Notomys*? (in the splash net). *Gumiera* along the stream, *fuchsias* blooming (the presence of *fuchsias* says something about winter minima)

The yellow *Calceolaria* with the 3-lobed pouch grows here on a slender stem about a foot tall - hardly adapted to mouse pollination.

yesterday forgot to mention that I gave a bat-skinning and lat-anatomy demonstration to about 20 teen-age members of a Secundaria class of Mrs Mayorga at the Guillermo Hudson Commercial School in El Bolson. One boy in the class said he had found a red bat in a cherry tree and that it was carrying two young. Kovace had told him that the 2 young were always ♂ and ♀. ~~the~~ Cherries are ripe at the end of November, and this one was seen while picking cherries, most people are familiar with red bats and when shown our specimens say that we have missed a bigger one that is "maroon" or "cinnamon" in color.

Drove about 10 km toward Epuyen looking for bat houses, then back to El Bolson and about half way to Bariloche. Stopped for the night at Lago Guillermo ^{2400 ft.}. Day sunny, warm. Camp is in a scrubby mixture of Notofagus, cedar, retamo (not the yellow Scotch broom), wild strawberry, grass. a few partial clearings have tree diggings; really quite weedy, and incredibly light fluffy soil. Set 35 traps, mostly around two feeding holes that looked old, and two tree traps. Heard one two call at dusk. Evening calm, temp. at 9:30 7°. One or more bats flying late dusk, maybe Lasiurus.

Nov. 21

Nothing in traps. Morning calm clear, temp at 6:30 0°, light frost and skin of ice on bucket. Drove to Bariloche, then to Estancia Fortin Chacabuco. Elderly German couple ± Zimmwaller, disillusioned with Argentina, no bats. Then to Estancia ^{ALICURA} Alicia, run by Laurin Morelli. They are in the midst of shearing, so the bats in the shearing shed are unavailable, but he took us to an abandoned house about 2 km from headquarters where there were droppings, a good attic. This is in a grove of poplars, willows, locusts a few hundred meters from the bridge over the Rio Caleufu and the Perito Moreno abelisk. Collected 60 km S ^E San Martin de Los Andes

1800 ft.; Neuquén. Day sunny and warm. Evening warm and calm and clear. Strung 2 bat nets next to house.

Morelli says he has seen as many as 3 Bears incubating one nest of eggs simultaneously; recently saw an adult rhea with 40? young. Gays bats are here all year. Also has bats in a small house across the Colon Curá bridge at Corral de Piedra and in the Escuelita at Paso de Flores. Gays social system of guanacos is same as that described by Kopold for vicuñas; bands of bachelor males numbering hundreds. He also says spiders as big as dinner plates in Mendoza.

many bats (looked like *Myotis*) flying at dusk, above, below, and around one of the nets. at 10:15 one bat flying inside the house, escaped. at 11:15 6 bats flying inside the house, caught all of them (non-breeding ♂ + ♀ *Myotis*). at 3 a.m. nothing more.

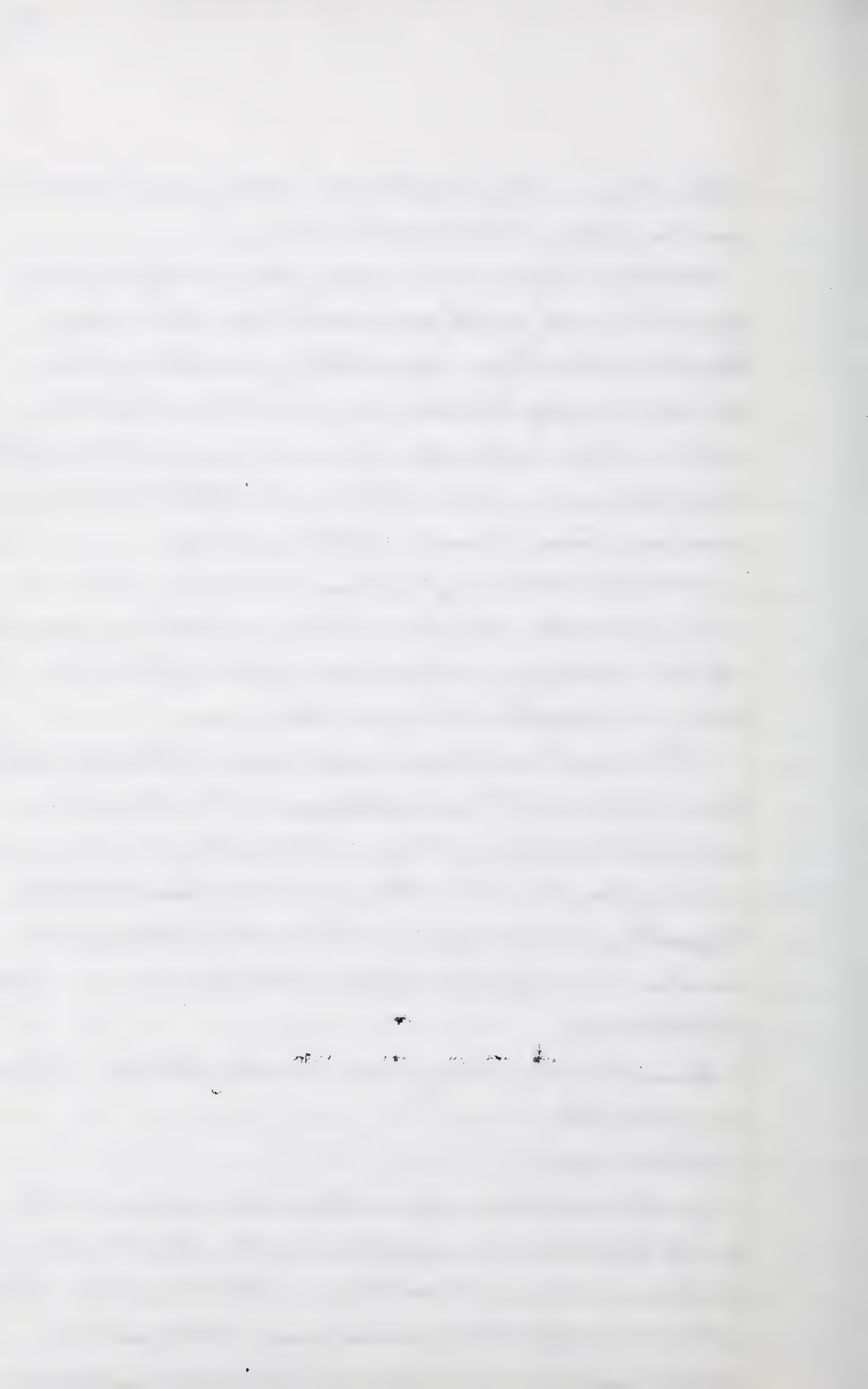
at 8 pm set about 30 traps in decent chest-high thornbush, rabbit brush (a yellow composite) and scattered grass. Ants set about 41 in various habitats including moist area with pampa grass clumps.

Nov. 22 morning clear, calm, $5\frac{1}{2}^{\circ}\text{C}$. Nothing in nets, 14 traps held *Reithrodon*, *Eligmodontia*, and *Akodon jelskii*. Ants caught *Reithrodon*, *Akodon*, and either a juv. *Elgino* or an *Colomys*. Also I got 2 tucois in 2 traps set last evening.

Skinned all morning - sunny & warm. Discarded 2 *Reithrodon*, 3 *Elgino*, and 1 *Akodon jelskii*.

Heard Calif. quail.

Drove to Corral de Piedra, which is slightly downstream and up in the hills from the Rio Colon Curá. Turn right at the bridge, then right about a $\frac{1}{2}$ km along the paved road onto a dirt track, then a couple of km farther. It is a rather forlorn outpost with a ranchouse, some workers quarters, a beautifully made big shearing barn, and two 40 ft - diam water tanks





Old matadero of Estancia Alicura. Nov 22, 1976. Pro. Murgueta



Cerro de Piedras, Nov 28, 1976. A la izquierda of Estancia Alicura

3-ft. deep and full to the brim. Bats squeaking at 8:30 p.m. in the creek in the back of the big shearing barn, droppings underneath. Poplars etc around the house, but little rather and sage brush of several species. Put a net inside the big barn and another over one of the water tanks. Saw Calif. quail and *Copetoma tinamou* 20 yds. apart.

Evening somewhat windy but warm. Lots of *myotis* drinking at the tank without the net. A few at the tank with net, but avoided it. At 10:30 there were 4 ♀ *myotis* in the barn net, none flying there.

Nov. 23

Morning calm, $\frac{1}{2}$ overcast, warm. Bats returned to barn between 4 and 5:30 a.m., but ^{no more} ~~none~~ caught in net. In the water tank net at 6:00 were 1 *myotis* ♀ and 1 *Tadarida* ♂. Returned to river bridge to skin, then drove to La Rinconada and the game wood estancia 3 km W of La Rinconada. It is a lush oasis of flowers, trees of all sorts including *encolyptus*, *Sequoia gigantea*, alder, ash, junipers, cypress, poplar, alamo, apple, cherry etc etc. Calif. poppy. Artesian water. Hummingbirds in winter but not in summer, whereas they are found in summer in *junco de los Andes*. They consider *Fouquieria* common in summer in the dense juniper trees and current bushes. Looked in various buildings for bats. Found one group in the ceiling of the tack room, but no way to get to them.

Left about 4 and drove to Estancia Chacabuco where we met Peter Symphon, the administrator (French sportsman ^{Bramberg family} owners). He said lots of bats in the attic of his house. We promptly had a look and caught 7 in crevices of beams - all male *myotis* and one ♂ *Tadarida*. Attic was quite warm. Lots of droppings, plus a waxy accumulations on the brick chimney where it passes through the attic. Could hear squeaking of other unreachables. They have made numerous attempts at eradication with spray cans of deodorant, burning

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sulfur etc. at dusk a half-dozen were flying round-and-round in a sudden subsection of the attic; caught 3 of them with sweepnet, one a female. at about 10, a dozen or more were flying in same area, and I caught about 10 of them, including females, all myotis. Great range of coloration. Put up no nets. night calm + clear, not cold.

Nov. 24

morning calm, somewhat overcast, temp at 6:15 $\frac{1}{2}^{\circ}\text{C}$. at 8 a.m. all quiet in attic, caught 1 more myotis in a crack. This house will be flooded upon completion of the Alicura dam in maybe 5 years.

Peter Symphon has only seen one Taximus (in a rose bush) in many years ~~years~~ here, in spite of lots of pines, junipers, poplars, and other flowers + planting. He is an excellent bird taxidermist and a good observer. Has raised pygmy owls (and one was colling while we were there). One of the French owners is a falconer and captures hawks of various sorts at the Estancia, as well as shooting stags in the bosque in the higher parts of the ~~hacienda~~ ^{estancia} (100,000 hectares). Counts kill numerous Taximus, and Symphon shoots them when they get into the stud lambs. about 1 per winter. He had stuffed a barn owl holding a short-tailed Notonotus? that had been captured "up high near the snow". He and his wife both agree that the bats are present in the winter, probably near the chimney. annual rainfall something like 500 mm, but this year very dry, about 250 mm.

This place is on the Rio Limay between Confluencia and the bridge over the Rio Colón Cura. mostly sage-brush habitat, fairuwin - like bunchgrass and shrubs, and willows.

Drove to Bariloche and checked into Selva Negra campground about 2 km W of town. one bat (myotis?) seen at dusk.

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Nov. 25 Drizzle almost all day. Visited the Fundación and Gallopin. Weather cleared at 7 p.m. Set 35 traps along lake front across ^{paved} the road from the road to the campground. Inok grass, mint, blackberry, rose, Scotch broom, big Urtica with gnarled roots, marshy places, ants set similar live. Saw one bat at dusk.

Nov. 26 Morning partly clear. Caught 10 Myotis longi, 5 Akodon (one of them a diff species), and 1 Buteo borealis. Visited with Gallopin in Barileto and with Aldo Brandani of INTA, who has been working on hares and rabbits. The Fundación Barileto is undergoing a budget crisis.

at 8 p.m. drove out to the Hotel Lago Moreno. One [♀] Histiotus hanging in a corner in attic of the garage, torpid. air temp in attic about 12°. Put up nets, drizzling. Temp at 9:15 6½°. a few bats seen flying at 9:30. Started catching some ^{myotis} at 10:15 at entrance to garage (a night roost). Still drizzling. more until midnight, then no more.

Nov. 27 Still drizzling. Nothing more in nets after about midnight. note that myotis arrived after about ¾ hr. of flying time, during drizzle, with fully full stomach and dry fur. In fact, none had wet fur when removed from the nets. all ♀♀, 1 myotis ad, 1 Histiotus. The wild rose here, unlike in Bolson, are not flowering yet. Compare stage of germination of myotis. Put up one of the darker specimens.

Drove to the Miribani RR Station east of Barileto, good attic but no bats. Then drove to Estancia Sorja on the Rio Limay at the Anfiteatro and talked with Sra Dolly Frey; no bats. Then returned to Estancia Corral de Piedras and put 2 nets over the water tanks. Evening calm, clear. Only a few bats flying at dusk. Caught two (myotis) before 10 p.m.

nov. 28

morning calm, clear, touch of frost; temp. $\frac{1}{2}^{\circ}$ at dawn. 2 more myotis in nets; one of them a ♂.

Two singing at dawn and sunrise; a double call tuc-tuc rapidly, then a $\frac{1}{2}$ second pause, repeat many times, then trailing off into a steady tuc-tuc-tuc-tuc. Three or more species of sage brush up to shoulder high, low green grass, and bare sandy gravel.

Drove to Paso de Flores, a ferry-boat over the Rio Zimay, and found bats under the corrugated roof of the school house. Two escaped and we caught 3, one of which, a preg. ♀ later escaped. Put up the poles of the remaining two; it was only slightly poles. The Alicura, Canal de Piedra, and Paso de Flores localities are in different Provinces but only a few miles apart. Some good cliffs and caves near Paso de Flores.

Spent night in the shewing shed of Estancia Alicura, with two nets in the shed, shewing ended earlier this week. Shed (= barn) smelt of disinfectant. Saw no bats or signs.

nov. 29

Temp at dawn $\frac{1}{2}^{\circ}$. No bats in nets. Drove to Bariloche, checked with Mrs. Rumbol, then off to Cerro Tronador with Carlos and Adriana. Set a complete series of trap lines at 4 different elevations in 4 different habitats of this Watershed ~~study area~~ study area.

845 m.
① Mallín - This is the lowest of the four. Swampy grass, sphagnum, Chusquea, and noto, antarctica dwarf, Anta set 20, 1 set 6 Shermans, 8 museum specials, and 1 rat. The students set maybe 20±.

coiled + large 1065 m
② Bosque Mito (N. douglasii and N. pumilio). Huge trees with some Chusquea, lots of rolling logs. Anta set traps.

1,300 m
③ Lengua - Large N. pumilio. The students set ~~many~~ small and large Shermans. number unknown.

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- ~~Long matoral~~ de Lengua 1,500m -
- ④ ~~Lengua matoral~~. This is the highest and is a tangle of bent-down N. pumilio. The sub in their plant census no. 10. I set 14 MS, and 7 shermans.

(west end)

Drove back to Lago Mascardi for the night. No bats seen at dusk. Day was clear sunny and warm, evening calm. These trapping localities are ① in the valley of the Rio Castano Overo which comes off of Cerro Trowador and ②③ and ④ on the north side of the valley at increasing altitudes. about 44 km W of Barileche.

Nov. 30 Night clear & calm. Temp at 6:30 AM -3° . Traps as follows:

- ① Mallin - In my traps 1 Myotis macropterus and 1 Akodon longipilis; ante's 2 Akodon longipilis.
- ② Bosque tuerto - 1 Notomys with short tail and long front claws and hoofs fur, looks like a miniature mountain beaver, and 10 Akodon longipilis.
- ③ Bosque de Lengua - 1 Akodon longipilis (all shermans, poorly set)
- ④ Matoral de Lengua - 1 Notomys as above.

The shermans were uniformly unsuccessful. One of ante's Akodon in the Bosque was caught between 9^{AM} and 1 PM.

At 5 P.M. divided up the traps evenly and set in 3 places

- ① Gallery forest ^{2600 ft.} along the river (lower than any of the above). This was N. antarctica and chusquea, rather scrubby.
- ② a burn ^{Bosque Bajo, 3000 ft.} 20 yrs ago. This was brushy, almost impenetrable.
- ③ another burn ^{Bosque Bajo}, slightly larger trees, chusquea, woodcutters. 2700 ft.

Day was clear & sunny. Lots of small iridescent lizards in the mallin, and even up in the Lengua matoral.

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Nov 30. = red-backed, pointed upturned snout.

antipart up, not on up

a 45-g breeding ♂ and a 37-g female.

night calm, clear. Started clouding up in the morning, no frost. Trap lines as follows: Bosque Bajo 2700ft (under trees, census 6), I had 14 traps of various kinds and caught 1 Chelon longipila and 1 Oryzomys, Anita with 12 traps (all M.S.)

Discarded: from Incendio: Oryzomys ♀ 32g preg - 2 emb.
Akodon longipolus ♀ 34g } large m.
parous
lact.

♀ 33g - ut. + vagina large
considerable mammary tissue

♂ 40g - testes + acc. very large

♂ 43g - " " "

♀ 30g much mammary tissue
uterine scars

♀ 44g much. many toxic
uterine scars

② from Bosque Galeria

akodon l.

♂ 48g testes very large

♀ ~~42g~~ 42g 4 emb.

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caught 1 Abodon longi. Carlos caught 1 Abodon other sp.

In the Bosque Bajo burned in 1957 (3000 ft) I had 8 traps and caught 4 Abodon longifilis. Anita used 11 Shermans and caught 7 mice (Abodon + Oryzomys)

In Bosque Salera - I used 10 traps (nothing caught), Anita had 15 rat traps, caught 3 Abodon longifilis. 2600 ft.

The totals including Carlos:

Bosque Bajo, Census 6 - 4 A. longifilis, 1 A. sp., 1 Oryzomys.

Bosque Bajo, Burned 1957 - 7 A. longifilis, 4 Oryzomys.

Bosque Salera - 3 A. longifilis.

Skinned until about 2:30, then drove back to Barilecho. Stayed at Humboldt home.

Dec. 2

Discussion in A.M. with Aldo Brandani, his wife Maria Alcina?, and Jorge Amaya who has been working on hares and rabbits for INTA. At 6 drove to Estancia El Condor with the Humboldts (south then east of airport). Shearing time, manager is Horacio and wife Chue Choezy. In the attic of their house found one cluster of the giant Histioteles (macrotes?) at the peak where 2 rafters meet the ridgepole, about 3 of them available by hand, and 2 or 3 more with forceps. Probably missed one of them. In a side attic Anita found a cluster hanging in the open, about a dozen, one of them Histioteles montanae and the others macrotes?. Caught all.

~~Found~~ They were not quite well aware. This was about 7:30 8 p.m. almost all with newborn young, 1 late preg., a few not preg.

Then looked for red rats in conifers, montanos etc, but found none.

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Dec. 3 Baribabo. Skinned in A.M. (mostly clear, windy on lake). In addition to those prepared as skins, we kept alive for release the following:

from the main attic: ♀ big-eared mother and naked pink 22 mm ^{forearm} young

" " " " ♀ " " " " 20 mm "

" " " " ♀ " late preg.

" " side attic ♀ " mother & naked young.

" " " " ♀ " " "

100

100

